Transmittal Letter to the United States Designated/Elected Office (DO/EO/US) FORM PTO-1390

JC12 Rec'd PCT/PTC 17 OCT 2005

Docket No. : **676-025US**
U.S. Application No. : TBA
International Application No.: **PCT/US2004/012082**
International Filing Date. : **April 19, 2004 (19 April 2004)**
Title of Invention : **SYSTEMS TO ENHANCE DATA ENTRY IN MOBILE AND FIXED ENVIRONMENT**
Applicant(s) for (DO/EO/US) : **Ghassabian**

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. X This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ___ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. X This express request to begin national examination procedures 35 U.S.C. 371 (f) at any time rather than delay examination until the expiration of the applicable time limit set forth in 35 U.S.C 371(b) and PCT Articles 22 and 39(1).
4. ___ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. X A copy of the International Application as filed [35 U.S.C. 371(c)(2)].
   a) X is transmitted herewith (required only if not transmitted by the International Bureau).
   b) ___ has been transmitted by the international Bureau.
   c) ___ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. X A translation of the International Application into English [35 U.S.C.371(c)(2)].
7. ___ Amendments to the claims of the International Application under PCT Article 19 [35 U.S.C.371(c)(3)].
   a) ___ are transmitted herewith (required only if not transmitted by the International Bureau).
   b) ___ have been transmitted by the International Bureau.
   c) ___ have not been made; however, the time limit for making such amendments has **NOT** expired.
   d) ___ have not been made and will not be made.
8. ___ A translation of the amendments to the claims under PCT Article 19 [35 U.S.C.371(c)(3)].
9. ___ An unsigned oath or declaration of the inventor(s) [35 U.S.C.371(c)(4)].
10. ___ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 [35 U.S.C.371(c)(5)].

Items 11. to 16. below concern other document(s) or information included:

11. X An Information Disclosure Statement under 37 C.F.R. 1.97 and 198.
12. ___ An Assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ___ A **FIRST** preliminary amendment **to be entered at filing.**
    ___ A **SECOND** or **SUBSEQUENT** preliminary amendment.
14. ___ A substitute specification.
15. ___ A change of power of attorney and/or address letter.
16. ___ (other items or information)

EXPRESS MAIL No.: EV 634787702 US Deposited: **October 17, 2005**

I hereby certify that this correspondence is being deposited with the United States Postal Service Express mail under 37 CFR 1.10 on the date indicated above and is addressed to the Commissioner of Patents and Trademarks, Washington, DC 20231.

Valentina Papraniku — October 17, 2005

Valentina Papraniku Date

17. X The following fees are submitted:

	CALCULATIONS	PTO USE ONLY
BASIC NATIONAL FEE [37 CFR 1.492(a)(1)-(5)]:		
X Basic National Stage Fee, Search Fee, Exam Fee..... $ 1000.00	$1000.00	
___ International preliminary examination fee paid to USPTO [37 CFR 1.482]:..... $ 720.00		
___ No International preliminary examination fee paid to USPTO [37 CFR 1.4B2] but International search fee paid to USPTO [37CFR 1.445(a)(2):..... $ 740.00		
___ Neither International preliminary examination fee [37 CFR 1.482] nor International search fee [37 CFR 1.445(a)(2)) paid to USPTO:..... $ 1040.00		
___ International preliminary examination fee paid to USPTO [37 CFR 1.482] and all claims satisfied provisions of PCT Article 33 (2) to (4):..... $ 100.00		
ENTER APPROPRIATE BASIC FEE AMOUNT:	1000.00	
Surcharge of $ 130.00 for furnishing the oath or declaration later than ___20___30 months from the earliest claimed priority date [37 CFR 1.492(e)]	$	

(Claims are based on Preliminary Amendment filed herewith)	Claims	filed	Extra	Rate		
	Total Claims	32-20=	12 x	$25.00=	300.00	
	Indep. Claims	5-3=	2 x	$100.00 =	200.00	
	Multiple Dependent Claims (if applicable) +			$ 230.=	$	
TOTAL OF ABOVE CALCULATIONS:					$1500.00	
Reduction by ½ for filing by small entity, if applicable. Verified Small Entity Statement must be filed also. [Note 37 CFR 1.9,1.27, 1.28] (divided by 2)					$1500.00	
SUBTOTAL:					$1500.00	
Processing fee of $ 130.00 for furnishing the English Translation later than ___20 ___30 months from the earliest claimed priority date [37 CFR 1.492(f)]					$	
TOTAL NATIONAL FEE:					$1500.00	
Fee for recording the enclosed assignment [37 CFR 1.21(h)] The assignment must be accompanied by an appropriate cover sheet [37 CFR 3.28,3.31].						
TOTAL FEES ENCLOSED:					$1500.00	
AMOUNT TO BE REFUNDED:					Refunded	$
AMOUNT TO BE CHARGED:					Charged	$

a) X A check in the amount of $1500.00 to cover the above fees is enclosed.

b) Please charge my Deposit Account No. 19-2825 in the amount of $ .00 to cover the above fees. A duplicate copy of this sheet is enclosed.

c) X The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 19-2825, order number 676-025US. A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 36 CFR 1.494 or 1.495 has not been met, a petition to revive [37 CFR 1.137(a) or (b)] must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO: Joseph Sofer, Esq.
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Suite 910
New York, NY 10017
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Joseph Sofer — signature — 34,438 — October 17, 2005
Name — Reg. No. — Date

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PATENT

Docket No. 676-025us

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s)	: Ghassabian
Serial No.	: TBA
Filed	: October 17, 2005
Title	: SYSTEMS TO ENHANCE DATA ENTRY IN MOBILE AND FIXED ENVIRONMENT

EXPRESS MAIL CERTIFICATE

Express Mail Label No.: EV 634787702 US

Date of Deposit October 17, 2005

I hereby certify that the following attached paper(s) or fee

1) National Stage Application (164 pages)
2) National Stage Transmittal
3) Return Postcard
4) Express Mail Certificate
5) Check for $1500.00
6) Informal Drawings (81 sheet)
7) International Patent Publication
8) IDS w/ Form PTO-1449

is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. §1.10 on the date indicated above and is addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Valentina Papraniku
(Typed or printed name of person mailing paper(s) or fee)

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SYSTEMS TO ENHANCE DATA ENTRY IN MOBILE AND FIXED ENVIRONMENT

Related Applications:

This application is related to and claims the benefit of priority from U.S. Provisional Application Nos. 60/463,844, filed on April 18, 2003; 60/466,594, filed on April 30, 2003; 60/468,028, filed on May 5, 2003; 60/474,447, filed on May 30, 2003; 60/475,533, filed on June 3, 2003; 60/482,706, filed on June 26, 2003; 60/482,998, filed on June 27, 2003; 60/496,702, filed on August 20, 2003; 60/500,602, filed on September 5, 2003; 60/504,331, filed on September 19, 2003; 60/510,885, filed on October 14, 2003; 60/536,564, filed on January 14, 2004; 60/552,968, filed on March 11, 2004; and 60/557,140, filed on March 26, 2004, the entirety of which are incorporated herein by reference.

Field of the Invention:

This application relates to a system and method for entering characters. More specifically, this application relates to a system and method for entering characters using keys, voice or a combination thereof.

Background of the Invention:

Typical systems and methods for electronically entering characters include the use of standard keyboards such a QWERTY keyboard and the like. However, as modern electronic devices have become smaller, new methods have been developed in order to enter desired characters.

On such method is to use a multi-press system on a standard telephonic numeric keypad, whereby multiple alphanumeric characters are assigned to the same key. One drawback with such a system is that it requires multiple pressing of single keys in order to enter certain characters, thereby increasing the overall number of key presses, slowing the character entry process.

A second method to accommodate the entering of characters on the ever smaller devices has been to simply miniaturize the standard QWERTY keypad onto the devices. However, such miniaturized keypads are often clumsy and do not afford sufficient space between the keys, causing multiple key presses when only a single press is desired.

Yet another attempt to accommodate the entering of characters on smaller electronic devices, is the use of voice recognition software. Such methods have been in use for some time, but suffer from a number of drawbacks. Most notably, voice recognition software suffers from the inability to distinguish homonyms, and often requires significant advance input for the system to recognize a particular speaker, their mannerisms and speech habits. Also, voice recognition software, in attempting to alleviate these problems, has grown large and requires

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a good deal of processing, not particularly suitable for the limited energy and processing capabilities of smaller electronic devices, such a mobile phones and text pagers.

Objects and Summary of the Invention:

It is the object of the present invention to overcome the drawbacks associated with the prior art, and provide a system and method for entering characters that is fast, reliable, and does not require large amounts of set up and energy/processing expenditures.

To this end, the present invention is directed to a data input system having a keypad defining a plurality of keys, where each key contains at least one symbol of a group of symbols. The group of symbols are divided into subgroups having at least one of alphabetical symbols, numeric symbols, and command symbols, where each subgroup is associated with at least a portion of a user's finger.

A finger recognition system is provided, in communication with at least one key of the plurality of keys, where the at least one key has at least a first symbol from a first subgroup and at least a second symbol from a second subgroup, where the finger recognition system is configured to recognize the portion of the user's finger when the finger interacts with the key so as to select the symbol on the key corresponding to the subgroup associated with the portion of the user's finger.

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Brief Description of the Drawings:

Fig. 1 illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 2 illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 3 illustrates a keypad with display, in accordance with one embodiment of the present invention;

Fig. 4 illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 5 illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 6 illustrates a keypad with display, in accordance with one embodiment of the present invention;

Fig. 7 illustrates a keypad with display, in accordance with one embodiment of the present invention;

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Fig. 7a illustrates a flow chart for making corrections, in accordance with one embodiment of the present invention;

Fig. 8 illustrates a foldable keypad, in accordance with one embodiment of the present invention;

Fig. 9 illustrates a foldable keypad, in accordance with one embodiment of the present invention;

Fig. 10 illustrates a foldable keypad, in accordance with one embodiment of the present invention;

Fig. 11 illustrates a foldable keypad, in accordance with one embodiment of the present invention;

Fig. 12 illustrates a foldable keypad, in accordance with one embodiment of the present invention;

Fig. 13 illustrates a keypad with display, in accordance with one embodiment of the present invention;

Fig. 14 illustrates a keypad with display, in accordance with one embodiment of the present invention;

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Fig. 15 illustrates a keypad with a mouse, in accordance with one embodiment of the present invention;

Fig. 16 illustrates a keypad with a mouse, in accordance with one embodiment of the present invention;

Fig. 17 illustrates a number of devices to use with the keypad, in accordance with one embodiment of the present invention;

Fig. 18 illustrates a keypad with a microphone, in accordance with one embodiment of the present invention;

Fig. 18b illustrates a keypad with a microphone, in accordance with one embodiment of the present invention;

Fig. 18c illustrates a keypad with a microphone, in accordance with one embodiment of the present invention;

Fig. 18d illustrates a keypad with a microphone, in accordance with one embodiment of the present invention;

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Fig. 18e illustrates a keypad with an antenna, in accordance with one embodiment of the present invention;

Fig. 18f illustrates a keypad with an antenna, in accordance with one embodiment of the present invention;

Fig. 18g illustrates a keypad with a microphone, in accordance with one embodiment of the present invention;

Fig. 18h illustrates a keypad with a microphone, in accordance with one embodiment of the present invention;

Fig. 18i illustrates a keyboard with a microphone, in accordance with one embodiment of the present invention;

Fig. 19 illustrates a keypad with a display and PC, in accordance with one embodiment of the present invention;

Fig. 20 illustrates a keypad with a display and PC, in accordance with one embodiment of the present invention;

Fig. 21 illustrates a keypad with a display and laptop computer, in accordance with one embodiment of the present invention;

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Fig. 22 illustrates a keypad with a display and a display screen, in accordance with one embodiment of the present invention;

Fig. 22a illustrates a keypad with a foldable display, in accordance with one embodiment of the present invention;

Fig. 22b illustrates a wrist mounted keypad and a remote display, in accordance with one embodiment of the present invention;

Fig. 23a illustrates a wrist mounted keypad and foldable display, in accordance with one embodiment of the present invention;

Fig. 23a illustrates a wrist mounted keypad and foldable display, in accordance with one embodiment of the present invention;

Fig. 23a illustrates a wrist mounted foldable keypad, in accordance with one embodiment of the present invention;

Fig. 24a illustrates a keypad with foldable display, in accordance with one embodiment of the present invention;

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Fig. 24b illustrates a keypad with foldable display, in accordance with one embodiment of the present invention;

Fig. 25a illustrates a keypad with foldable display, in accordance with one embodiment of the present invention;

Fig. 25b illustrates a keypad with foldable display, in accordance with one embodiment of the present invention;

Fig. 26 illustrates a keypad with an extension arm, in accordance with one embodiment of the present invention;

Fig. 27 illustrates a keypad with an extension arm, in accordance with one embodiment of the present invention;

Fig. 27a illustrates a keypad with an extension arm, in accordance with one embodiment of the present invention;

Fig. 27b illustrates a keypad with an extension arm, in accordance with one embodiment of the present invention;

Fig. 28 illustrates a keypad, in accordance with one embodiment of the present invention;

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Fig. 29 illustrates a mouthpiece, in accordance with one embodiment of the present invention;

Fig. 29a illustrates a keypad and mouthpiece combination, in accordance with one embodiment of the present invention;

Fig. 30 illustrates an earpiece, in accordance with one embodiment of the present invention;

Fig. 31 illustrates an earpiece and keypad combination, in accordance with one embodiment of the present invention;

Fig. 32 illustrates an earpiece, in accordance with one embodiment of the present invention;

Fig. 33 illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 34 illustrates a voice recognition chart, in accordance with one embodiment of the present invention;

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Fig. 35 illustrates a voice recognition chart, in accordance with one embodiment of the present invention;

Fig. 36 illustrates a sample voice recognition, in accordance with one embodiment of the present invention;

Fig. 37 illustrates a voice recognition chart, in accordance with one embodiment of the present invention;

Fig. 38 illustrates a voice recognition chart, in accordance with one embodiment of the present invention;

Fig. 39 illustrates a voice recognition chart, in accordance with one embodiment of the present invention;

Fig. 40 illustrates a voice recognition chart, in accordance with one embodiment of the present invention;

Fig. 41 illustrates a voice recognition chart, in accordance with one embodiment of the present invention;

Fig. 42 illustrates a traditional keyboard, in accordance with one embodiment of the present invention;

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Fig. 43 illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 43a illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 43b illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 44a illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 44b illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 45 illustrates a keyboard, in accordance with one embodiment of the present invention;

Fig. 45a illustrates a keypad, in accordance with one embodiment of the present invention;

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Fig. 45b illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 45c illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 45d illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 46a illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 46b illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 46c illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 47a illustrates a keypad with display, in accordance with one embodiment of the present invention;

Fig. 47b illustrates a keypad with display, in accordance with one embodiment of the present invention;

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Fig. 47c illustrates a keypad with display, in accordance with one embodiment of the present invention;

Fig. 47d illustrates a keypad with display, in accordance with one embodiment of the present invention;

Fig. 47e illustrates a keypad with display, in accordance with one embodiment of the present invention;

Fig. 47f illustrates a keypad with display, in accordance with one embodiment of the present invention;

Fig. 47g illustrates a standard folded paper, in accordance with one embodiment of the present invention;

Fig. 47h illustrates a standard folded paper, in accordance with one embodiment of the present invention;

Fig. 47i illustrates a standard folded paper with a keypad and display printer, in accordance with one embodiment of the present invention;

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Fig. 48 illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 49 illustrates a watch with keypad and display, in accordance with one embodiment of the present invention;

Fig. 49a illustrates a watch with folded keypad and display, in accordance with one embodiment of the present invention;

Fig. 49b illustrates a closed watch with keypad and display, in accordance with one embodiment of the present invention;

Fig. 50a illustrates a closed folded watch face with keypad, in accordance with one embodiment of the present invention;

Fig. 50b illustrates an open folded watch face with keypad, in accordance with one embodiment of the present invention;

Fig. 51 illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 51a illustrates a keypad, in accordance with one embodiment of the present invention;

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Fig. 51b illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 52 illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 53 illustrates a keypad and display, in accordance with one embodiment of the present invention;

Fig. 54 illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 55a illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 55b illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 55c illustrates a keypad on the user's hand, in accordance with one embodiment of the present invention;

Fig. 55d illustrates a microphone and camera, in accordance with one embodiment of the present invention;

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Fig. 55e illustrates a microphone and camera, in accordance with one embodiment of the present invention;

Fig. 55f illustrates a folded keypad, in accordance with one embodiment of the present invention;

Fig. 55g illustrates a key for a keypad, in accordance with one embodiment of the present invention;

Fig. 55h illustrates a keypad on a mouse, in accordance with one embodiment of the present invention;

Fig. 55i illustrates the underside of a mouse on a keypad, in accordance with one embodiment of the present invention;

Fig. 55j illustrates an earphone, and microphone with a keypad, in accordance with one embodiment of the present invention;

Fig. 56 illustrates a keypad, in accordance with one embodiment of the present invention;

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Fig. 56a illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 56b illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 57 illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 57a illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 58a illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 58b illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 58c illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 59a illustrates a keypad, in accordance with one embodiment of the present invention;

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Fig. 59b illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 60 illustrates a keypad and display cover, in accordance with one embodiment of the present invention;

Fig. 61a illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 61b illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 61c illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 62a illustrates a keypad and display, in accordance with one embodiment of the present invention;

Fig. 62b illustrates a keypad and display, in accordance with one embodiment of the present invention;

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Fig. 63a illustrates a keypad and display, in accordance with one embodiment of the present invention;

Fig. 63b illustrates a keypad and display, in accordance with one embodiment of the present invention;

Fig. 63c illustrates a keypad and display, in accordance with one embodiment of the present invention;

Fig. 63d illustrates a keypad and display, in accordance with one embodiment of the present invention;

Fig. 63e illustrates a keypad and display on a headset, in accordance with one embodiment of the present invention;

Fig. 64a illustrates a keypad and display, in accordance with one embodiment of the present invention;

Fig. 64b illustrates a foldable keypad and display, in accordance with one embodiment of the present invention;

Fig. 65a illustrates a keypad and display, in accordance with one embodiment of the present invention;

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Fig. 65b illustrates the back side of a keypad and display, in accordance with one embodiment of the present invention;

Fig. 65c illustrates a keypad and display, in accordance with one embodiment of the present invention;

Fig. 66 illustrates a plurality of keypads and displays connected through a main server/computer, in accordance with one embodiment of the present invention;

Fig. 67, illustrates a keypad in the form of ring sensors, in accordance with one embodiment of the present invention;

Fig. 68 illustrates a keypad and display, in accordance with one embodiment of the present invention;

Fig. 68a illustrates a display, in accordance with one embodiment of the present invention;

Fig. 69 illustrates a keypad, in accordance with one embodiment of the present invention;

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Fig. 69a illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 69b illustrates a keypad and display, in accordance with one embodiment of the present invention;

Fig. 70a illustrates a flexible display, in accordance with one embodiment of the present invention;

Fig. 70b illustrates a flexible display with keypad, in accordance with one embodiment of the present invention;

Fig. 70c illustrates a flexible display with keypad, in accordance with one embodiment of the present invention;

Fig. 70d illustrates a closed collapsible display with keypad, in accordance with one embodiment of the present invention;

Fig. 70e illustrates an open collapsible display with keypad, in accordance with one embodiment of the present invention;

Fig. 70f illustrates a flexible display with keypad and printer, in accordance with one embodiment of the present invention;

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Fig. 70g illustrates a closed foldable display with keypad, in accordance with one embodiment of the present invention;

Fig. 70h illustrates an open foldable display with keypad, in accordance with one embodiment of the present invention;

Fig. 71a illustrates a flexible display with keypad and antenna, in accordance with one embodiment of the present invention;

Fig. 71b illustrates a flexible display with keypad and antenna, in accordance with one embodiment of the present invention;

Fig. 71c illustrates a display with keypad and extendable microphone, in accordance with one embodiment of the present invention;

Fig. 72a illustrates a wristband of an electronic device, in accordance with one embodiment of the present invention;

Fig. 72b illustrates a detached flexible display in a closed position, in accordance with one embodiment of the present invention; and

Fig. 72c illustrates a detached flexible display in an open position, in accordance with one embodiment of the present invention.

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Detailed Description of the Preferred Embodiment:

The invention described hereafter relates to method of configuration of symbols such as characters, punctuation, functions, etc. (e.g. symbols of a computer keyboard) on a small keypad having a limited number of keys, for data entry in general, and for data and/or text entry method combining voice/speech of a user and key interactions (e.g. key presses) on a keypad, in particular. This method facilitates the use of such a keypad.

Fig. 1, shows an example of an integrated keypad 100 for a data entry method using key presses and voice/speech recognition systems. In this example, the keys of the keypad may respond to one or more type of interactions with them. Said interactions may be such as:

- pressing a key with a specific finger or a portion of a finger (using a finger recognition system)
- a single tap (e.g. press) on a key or a double tap (e.g. two consecutive presses with short time interval) on a key.
- a slight pressure (or a touch) on a key, or a heavy pressure on a key
- a short time interaction with a key (e.g. a short time pressing of a key) or a longer time pressing of a key etc...

To each of said interactions or to any combination of them with the keys of the keypad, a group of symbols on said keypad may be assigned. For example, the symbols shown on the top side of the keys of the keypad 100, may be

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assigned to a single pressure on the keys of the keypad. If a user, for example presses the key 101, the symbols "DEF3 ." may be selected. In the same example, the symbols configured on the bottom side of the keys of the keypad 100, may be assigned for example, to a double tap on said keys. If a user, for examples double taps on the key 101, then the symbols "{ }' " are selected.

Same selection may also be possible with other interactions such as those described before depending on the system implemented with the keys of the keypad. For example, a slight press (or a touch) on the key 101, could select the symbols configured on the top side of said key, and a heavier pressure on the same key, could select the symbols configured on the bottom side of said key.

As described, when a user interacts with a key, a recognition system candidates the symbols on said key which are assigned to said type of interaction. For example, if a user touches or slightly presses the key 102, the system candidates the symbols, "A", "B", "C", "2", and ",". To select one of said candidated symbols, said user may speak, for example, either said symbol or a position appellation of said symbol on said key. For this purpose a voice/speech recognition systems is used.

If the user does not speak, a predefined symbol among those candidated symbols, may be selected as default. In this example, the punctuation "," shown in a box 103 is selected. To select one of the other candidated symbols, for example the letter "B", the user may speak said letter.

In the same example, if the user presses heavily the key 102, then the symbols "[", "]", and " " " may be candidated. As described above, if the user

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does not speak, a predefined symbol among those selected by said pressing action, may be selected as default. In this example, the punctuation " " " is selected. Also in this example, to select a desired symbol among the two other candidated symbols "[", or "]", the user may use different methods such as speaking said desired symbol, and/or speaking its position relating to the other symbols, and/or speaking its color (if each symbol has a different color), and/or any predefined appellation (e.g. a predefined voice or sound generated by a user) assigned to said symbol. For example, if the user says "left", then the character "[" is selected. If the user says "right", then the character "]" is selected.

Of course, instead of using a voice/speech, a behavior of a user combined with a key interaction may select a symbol. For example, a user may press the key 102 heavily and swipe his finger towards a desired symbol.

The above-mentioned method of data entry may also be applied to a keypad having keys responding to a single type of interaction with said keys (e.g. a standard telephone keypad having push-buttons). As shown in Fig. 2, a keypad 200 having keys responding to a single interaction with said keys. When a user presses a key all of the symbols on said key are candidated by the system. For example, if the user presses the key 202, then the symbols, "A", "B", "C", "2", ",", "[", " ", and "]" are canditated.

In this example, if the user does not speak, the system may select a predefined default symbol. In this example, punctuation "," 203 is selected.

Still in the same example, to select a desired symbol among the said candidates, the user may either speak a desired symbol, or for example, speak a

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position appellation of said symbol, on said key or relating to other symbols on said key, or any other appellation as described before. For example, a symbol among those configured on the top of the key (e.g. "A", "B", "C", or "2"), may be selected by speaking it. On other hand, for example, one of the symbols configured on the bottom side of the key, (e.g. "[", " ", or "]") may be selected by speaking its position relative, for example, to the two other symbols on the bottom side of said key, by saying for example, "left", "middle", or "right". For example, to select "[" 204, the user may press the key 202 and say "left".

As mentioned, the keys the keypad of fig.1, may respond to at least two predefined types of interactions with them. Each type of interaction with a key of said keypad may candidate a group of said characters on said key.

As described before, during a data entry such as writing a text, different interactions with the keys (e.g. one tap, double tap) and different user behavior (e.g. speaking, not speaking) combined with said key interactions, may be required. Although the data entry method of this invention is a quick and easy data entry, a good configuration of the symbols on the keys of the keypad of this invention, may result a still easier and quicker data entry system. This method will be described hereafter.

According to one embodiment, as shown in fig. 3, a number of symbols (e.g. symbols on a computer keyboard) are physically divided into at least two groups and arranged on a telephone keypad keys by their order of priority (e.g. frequency of use, familiarity of the user with existing arrangement of some

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symbols such as letters and digits on a standard telephone keypad, etc.), as follow:

First group assigned to a first type of interaction with a keys

a) A first subgroup using voice/speech

Digits 0 – 9, and letters A-Z may be placed on the keys of a keypad according to standard configuration and assigned to a first type of interaction (e.g. a first level of pressure) with said keys. A desired symbol among them may be selected by interacting (e.g. said first type of interaction) with a corresponding key and naturally speaking said symbol. In fig. 3 said symbols (e.g. 301) are configured on the top side of the keys.

Letters and digits may frequently be used during, for example, a text entry. They both, may naturally be spoken while, for example, tapping on corresponding keys. Therefor, for faster and easier data entry, they preferably may be assigned to a same type of interaction with the keys of a keypad.

b) A second subgroup not using voice/speech

At least part of the other symbols (e.g. punctuation, functions, etc.) which are frequently used during a data (e.g. text) entry may be placed on the keys (one symbol per key) of the keypad and be assigned to said first type of interaction (e.g. a single tap) with said keys. As default, a desired symbol may be selected by only said interaction with corresponding key without the use of

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speech/voice. In fig. 3 said symbols (e.g. 302) are configured in boxes on the top side of the keys.

Of course, said symbols may also be selected by speaking them while interacting with a corresponding key, but because speaking this kind of symbols (e.g. punctuation, functions) is not always a natural behavior, it is preferable to not to speak them.

At least a second group assigned to at least a second type of interaction with at least one key

At least part of the remaining symbols may be assigned to at least a second type of interaction with said keys of said keypad. They may be divided into two groups as follow:

c) A third subgroup not using voice/speech

A third subgroup comprising the remaining frequently used symbols and the ones which are difficult and/or not natural to pronounce, may be placed on said keys of said keypad (one symbol per key) and assigned to a second type of interaction (e.g. double tap, heavier pressure level, two keys pressed simultaneously, a portion of a finger by which the key is touched, etc.) with said keys.

As default, a desired symbol may be selected by only said interaction with a corresponding key without the use of speech/voice. In fig. 3 said symbols (e.g. 303) are configured in boxes on the bottom side of the keys. Of course, said

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symbols may also be selected by speaking them while interacting with a corresponding key, but because speaking this kind of symbols (e.g. punctuation, functions) is not always a natural behavior, it is preferable to not to speak them.

d) At least a fourth subgroup using voice/speech

A fourth subgroup comprising at least part of remaining symbols may also be assigned to said second type of interaction with the keys of said keypad and be combined with a user's behavior such as voice. In fig. 3 said symbols (e.g. 304) are configured on the bottom side of the keys. Said symbols may be selected by said second type of interaction with a corresponding key and use of voice/speech in different manners such as:

- the symbols being selected by naturally pronouncing their appellation
- the symbols being selected by naturally speaking their position relative to each other on a key or their position while using them in a text (e.g. "<", ">" in this example, said symbols do not belong to said second type of interaction, this is only an example), by saying for example, "left, right, open, close, etc."
- the symbols which are very rarely used (they are very few) and/or are difficult to pronounce (e.g. 304). For a fast and easy data entry method, said symbols may also be selected by speaking their position on a key, or relative to each other on said key. Of course they may be selected by using other speech such a pronouncing them.

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e) Others

If needed, other symbols such as "F1-F12", etc. may be provided on the keys of the keypad and assigned a type of interaction. For example, they may be assigned to said second type of interaction (with or without using speech), or be assigned to another kind of interaction such as pressing two keys simultaneously, triple tagging on corresponding key(s), using a switch to enter to another mode, etc.

More considerations to enhance the keypad and the use of it

Because Digits 0 – 9, and letters A-Z may be placed on the keys of a keypad according to standard configuration and be assigned to a first type of interaction (e.g. a first level of pressure, a single tap, etc.) with said keys combined with speech, some keys such as 311, 312, 313, and 314, may contain at most one symbol (e.g. digit 1 on the key 311, or digit 0 on the key 313) used in said configuration. Thus, for better use of said keys, some easy and natural to pronounce symbols 321-324 may be added on said keys and be assigned to said first type of interaction. for example, a user can select the character "(" by using a first type of interaction with key 311 and saying, for example, "left", or "open". To select the character ")" the user may use the same first type of interaction with said key 311 and say for example, "right" or "close". This is a quick, and more importantly a natural speech for said symbols. Because the number of candidated symbols on said keys 311-314, assigned to said first type of interaction does not

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exceed the ones on the other keys, the voice recognition system may still have a similar degree of accuracy as for the other keys.

Also, some symbols may be used in both modes (interactions with the keys). Said symbols may be configured more than once on a keypad (e.g. either on a single key or on different keys) and be assigned to a first and/or to a second type of interaction with corresponding key(s).

Fig.3, illustrates a preferred embodiment of this invention for a computer data entry system. The keys of the keypad 300 respond to two or more different interaction (such as different levels of pressures, single or double tap, etc.) on them. As shown, a number of symbols, such as alphanumerical characters, punctuations, functions, and PC command are distributed among said keys as follow:

Mode 1

First group- Letters A-Z and digits 0-9 are the symbols which are very frequently used during a data entry such as writing a text. They may easily and most importantly, naturally, be pronounced while pressing corresponding keys. Therefor they are arranged together on the same side on the keys, belonging to a same type of interaction (e.g. a first mode) such as a single tap (e.g. single press) on a key, and are selected by speaking them.

Second group- Characters such as punctuations, and functions which are very frequently used during a data entry such as writing a text, may belong to a same type of interaction which is used for selecting said letters and digits (e.g.

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said first mode). This is to stay, as much as possible, with a same type of interaction with the keys while entering data. Each key may only have one of said characters of said second group. This group of symbols may be selected by only pressing a corresponding key, without using voice. For better distinction, they are shown in boxes on the top (e.g. same side as for the letters and the digits) of the keys.

Mode 2

Other symbols of said number of symbols are shown on the bottom side of the keys of the keypad. They are assigned to a second type of interaction (e.g. double tap) with said keys.

Third group- The default symbols (e.g. those which require an interaction with a key and may not require use of voice) are shown in boxes. Said symbols comprise characters, punctuations, functions, etc., which are less currently used by users.

Fourth group- Finally the symbols which are rarely used in a data entry, and are not spelled naturally, are in this example, located at the left side on the bottom side of the keys. They may be selected by corresponding interaction (e.g. double tapping) with corresponding key and either (e.g. almost simultaneously) pronouncing them, or calling them by speaking a predefined speech or voice assigned to said symbols (e.g. "left, right", or "blue, red" etc.).

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By using a keypad having keys corresponding to different type of interaction with them (preferably two types, to not complicate the use of the keys) and having some symbols which do not require speech (e.g. defaults), when a key of said keypad is interacted, either a desired key is directly interacted (e.g. default), or the candidated symbols to be selected by a user behavior such as voice/speech are minimal. This augments the accuracy of voice recognition system.

For example, when a user slightly presses a key, the system selects the symbols on the top of said key among those symbols situated on said key. If the user simultaneously uses a voice, then the system selects those symbols requiring voice among said selected symbols. This procedure of reducing the number of candidates and requiring voice recognition technology to select one of them, is used to have a data entry with high accuracy through a keypad having a limited number of keys. The reducing procedure is made by user natural behaviors, such as pressing a key and/or speaking.

As shown in fig.4, the keys 411, 412, 413, and 414, have up to one symbol (shown on the top side of said keys) requiring voice interaction and assigned to a first type of interaction with said keys. On the other hand, same keys on the bottom side contain two symbols which require a second type of interaction with said keys and also requires voice interaction. Said two symbols may be used more frequently (e.g. in an arithmetic data entry or when writing a software, etc.) than the other symbols belonging to same category. In this case and to still minimize the user errors while interacting with keys (e.g. pressing),

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said symbols may also been assigned to said first type of interaction with said keys. The total of the candidated symbol remains low. A user may press said key as he desires and speak.

Additional arrangements may be provided on above-mentioned keypad to facilitate its use by a user. For example, "-" and "_" , "'" and "'", or ";" and ":" may be configured as default symbols on a same key 411, or on two neighboring keys 415, 416. Also "Sp" and " " (e.g. Tab), may also be considered as default symbols and been configured on the same key 412, each responding to a different type of interaction (e.g. pressing level) with said key. For example, by pressing once the key 412, the character "Sp" is selected. By double tapping the same key, the "tab" function is selected.

While interacting with a key (e.g. pressing a key once or double tagging on it), by not releasing said key, a symbol corresponding to said interaction (including speech if needed) may be selected and repeated until the key is released. For example, by double tapping on the key 415 and keeping the key pressed after the second tap and not speaking, the default symbol (e.g. "&") assigned to said interaction is selected and repeated until the user releases said key. To enter the letter "X" and repeating it, the user may for example, press the corresponding key 415 (without releasing it) and say "X". The letter "X" will be repeated until the user releases said key.

Also, for a more familiar look of the keypad, letters, digits, and characters such as "#" and "*", may be placed on said keys according to a standard telephone keypad configuration.

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Additional keys separately disposed from the keys of said keypad may be used to contain some of said symbols or additional symbols. In the example of Fig. 6, the cursor is navigated in different directions by at least one key separately disposed from the keys of the keypad 600. A single key 601, may be assigned to all directions 602. The user may, for example, press said key and say "up, down, left, or right to navigate the cursor in corresponding directions. The key 601, may also be a multi-directional key (e.g. similar to those used in video games, or in some cellular phones to navigate in the menu). The user may press on the top, right, bottom, or left side of the key 601, to navigate the cursor accordingly. Also a plurality of additional keys may be assigned, each to for example, to at least a symbol such as " ".

Said additional keys may be the existing keys on an electronic device. For example, in a cellular phone, in addition to the twelve keys of a standard telephone keypad, additional function keys such as menu key, or on/of key etc., are provided. at least some of those keys may be used as additional data entry keys, containing a number of symbols, while the system is, for example, in a text entry mode. This frees some spaces on the standard telephone keypad keys. The freed spaces may permit a better accuracy of voice recognition system and/or a more user friendly configuration of the symbols on the keys of the keypad.

The above-mentioned method of configuration and the examples shown before are only shown as examples. Of course many other configurations of the symbols and different assignment to different user interactions with the keys may

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be considered. For example, a key may not have a default symbol or on a key, there may be no symbols which are assigned to a voice/speech.

Also not all of the keys of the keypad may respond to a same kind of interaction. For example, a first key of a keypad may respond to two levels of pressure while another key of the same keypad may respond to a single or double tap on it.

Figs. 1-7 show different configurations of the symbols on the keys of keypads.

The above-mentioned data entry system permits a full data entry such as a full text data entry through a computer keypad. By inputting, one by one, characters such as letters, punctuation marks, functions, etc, words, and sentences may be inputted.

This will have a great impact on telecommunication market permitting to enhance many applications and methods already in use. Some of them are listed hereafter. It is understood that any combination of the above-mentioned interactions may be used for inputting a desired symbol.

According to one embodiment of the invention, the user uses voice/speech to input a desired symbol such as a letter without other interaction such as pressing a key. The user may use the keys of the keypad (e.g. single press, double press, triple press, etc) to enter symbols such as punctuations without speaking them.

It is understood that the data entry method described in this application may be applied to all other languages such as Chinese, Koreans, Japanese, Etc.

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Correction and Repeating of Symbols

Different methods may be used to correct an erroneously entered symbol. As mentioned, to enter a symbol, a user for example, may press a corresponding key and speak said desired symbol configured on said key. It may happen that the voice/speech recognition system misinterprets the user's speech and the system selects a non-desired symbol configured on said key.

For example, if the user:

a) recognizes an erroneously entered symbol before entering a next desired symbol (e.g. the cursor is positioned after said erroneous symbol, next to it), he then may proceed a correction procedure explained hereafter;

b) recognizes an erroneously entered symbol after entering at least a next symbol, he first may navigate in the text by corresponding means such as the key 101 (fig.1), or 202 (fig.2), having navigation functions, and positions the cursor after said erroneous symbol next to it. He, then, proceeds to a correction procedure explained hereafter;

After positioning the cursor after said erroneous symbol, next to it, the user may re-speak either said desired symbol or its position appellation without re-pressing said corresponding key. If the system again selects the same deleted symbol, it will automatically reject said selection and selects a symbol among remaining symbols configured on said key, wherein either its appellation or its

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position appellation corresponds to next highest probability corresponding to said user's speech. If still an erroneous symbol is selected by the system, the procedure of re-speaking the desired symbol by the user and the selection of the next symbol among the remaining symbols on said key with highest probability, may continue until said desired symbol is selected by the system.

It is understood that in a data entry system using a keypad having keys responding, for example, two levels of pressure, when correcting, the recognition system may first proceed to select a symbol among those belonging to the same group of symbols belonging to the pressure level applied for selecting said erroneous symbol. If none of those symbols is accepted by the user, then the system may proceed to select a symbol among the symbols belonging to the other pressure level on said key.

Fig. 7B, shows a flowchart corresponding to an embodiment of a method of correction. If for any reason a user wants to correct an already entered symbol, he may enter this correction procedure.

Correction procedure starts at step 701. If the replacing symbol is not situated on the same key as the to-be-replaced symbol 702, then the user deletes the to-be-replaced symbol 704, and enters the replacing symbol by pressing a corresponding key and if needed, with added speech 706 and exits 724.

If the replacing symbol is situated on the same key as the to-be-replaced symbol 708, and the replacing symbol does not require speech 710, then the system proceeds to steps 704 and 706, and acts accordingly as described before, and exits 724.

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If the replacing symbol is situated on the same key as the to-be-replaced symbol 708, and the replacing symbol does require speech 712, two possibilities are considered:

a) the cursor is not situated after the to-be-replaced symbol 714. In this case the user positions the cursor after the to-be-replaced symbol, next to it 716, and proceeds to next step 718;

b) the cursor is situated after the to-be-replaced symbol 714 (e.g. the user recognizes an erroneously entered symbol, immediately). In this case the user proceeds to next step 718;

At the step 718, the user speaks the desired symbol without pressing a key. By not pressing a key and only speaking, the system understands that a symbol belonging to a key which is situated before the cursor must be replaced by another symbol belonging to the same key. The system then, will select a symbol among the rest of the symbols (e.g. excluding the symbols already selected) on said key with highest probability corresponding to said speech 720. If the new selected symbol is yet a non-desired symbol 722, the system (and the user) re-enters at the step 718. If the selected symbol is the desired one the system exits the correction procedure 724.

Of course, instead of the above-mentioned method, a conventional method of correcting a symbol may also be provided. for example, to correct an already entered symbol, the user may simply, first delete said symbol and then re-

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enter a new symbol by pressing a corresponding key and if needed, with added speech.

The text entry system, may also be applied to a word level (e.g. the user speaks a word and types it by using a keypad). A same text entry procedure may combine word level entry (e.g. for words contained in a data base) and character level entry. Therefore the correction procedure described above, may also be applied for a word level data entry.

For example, to enter a word a user may speak said word and press the corresponding keys. If for any reason such as disambiguity between two words having closed pronunciation and similar key presses, the recognition system selects a non-desired word, then the user may re-speak said desired word without re-pressing said corresponding keys. The system then, will select a word among the rest of candidates words corresponding to said key presses (e.g. excluding the words already selected) with highest probability corresponding to said speech. If the new selected word is yet not the desired one, the user may re-speak said word. this procedure may be repeated until either said desired word is selected by the system or there is no other candidate word. in this case, the user can enter said desired word by character by character entry system such as the one explained before.

It is understood that in word level, when correcting, the cursor should be positioned after said to-be-replaced word. For this purpose and for avoiding the ambiguity with character correction mode, when modifying a whole word (word correcting level), the user may position the cursor after said to-be-replaced word

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wherein at least one space character separates said word and said cursor. This is because for example, if a user wants to correct the last character of an already entered word, he should locate the cursor immediately after said character. By positioning the cursor after at least one space after the word (or at the beginning of the next line, if said word is the last word of the previous line), and speaking without pressing keys, the system recognizes that the user may desire to correct the last word before the cursor. For better result, it is understood that if the to-be-replaced word contains a punctuation mark (e.g. "." "?" "," etc.), the cursor may be replaced after an space after the punctuation mark. This is because in some cases the user may desire to modify an erroneous punctuation mark which must be situated at the end of a word. For this purpose the user may position the cursor next to said punctuation mark.

To avoid accidental corrections (e.g. the cursor is positioned somewhere in the text and someone speaks without intending a data entry), different methods may be applied. For example, a pause or non-text key may be used while a user desires for example, to rest during a text entry. Another solution is that after the cursor is positioned in a location in a text, after a laps of time (for example two seconds) no correction of the last word or character before the cursor is accepted by the system. If a user desires to correct said word or said character he may, for example, navigate said cursor (at least one move to any direction) and bring it back to said desired position. After the cursor is repositioned in the desired location, the time will be counted from the start and the user should start correcting said word or said character before said laps of time is expired.

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Repeating a symbol

To repeat a desired symbol, the user, first presses the corresponding key and if required either speaks said symbol, or he speaks the position appellation of said symbol on its corresponding key or according to other symbols on said key. The system then selects the desired symbol. The user continues to press said key without interruption. After a predefined laps of time, the system recognizes that the user indents to repeat said symbol. The system repeats said symbol until the user stops pressing said key.

It should be noted that the above described method of correction and repeating of key symbol can be used in conjunction with any method of entry including but not limited to single/double tap, pressure sensitive keys, keys pressed simultaneously, keys pressed on only a potion thereof etc.

Telephone directory

To make a phone call, instead of dialing a number, a user may enter a to-be-called destination by any information such as name (e.g. person, company, etc.) and if necessary enter more information such as the said to-be-called party address, etc. A central directory, may automatically direct said call to said destination. If there are more than one telephone lines assigned to a said destination (e.g. party), or there are more than one choice for said desired information entered by the user, a corresponding selection list (e.g. telephone

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numbers, or any other predefined assignments assigned to said telephone lines) may be transmitted to the caller's phone and displayed for example, on the display unit of his phone. Then the user may select a desired choice and make the phone call.

The above-mentioned method of calling (e.g. dialing), may permit to eliminate the need of calling a party (e.g., a person) by his/her telephone number. Therefor may eliminate (or at list reduces) the need of remembering phone numbers, carrying telephone books, or using an operator's aid.

Interactive directories using voice/speech

Voice directories are more and more used by companies, institutions, etc. This method of interaction with another party is a very time consuming and frustrating procedure for the users. Many people, by hearing a voice directory on the other side of the phone, disconnect the communication. Even when a person tries to interact with said system, it frequently happens that after spending plenty of time, the caller does not succeed to access a desired service or person. The main reason for this ambiguity is that when listening to a voice directory indication, many times a user must wait until all the options are announced. He (the user), many times does not remember all choices which were announced. He must re-listen to those choices.

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Also many times the voice directory demands a data to be entered by a user. This data entry is limited in variation because of either the limited number of keys of a telephone keypad or the complexity of entering symbols through it.

The above-mentioned data entry method permits a fast visual interaction with a directory. The called party may transmit a visual interactive directory to the caller and the caller may see all choices almost instantly, and respond or ask questions using his telephone keypad (comprising the above-mentioned data entry system) easily and quickly.

Voice mails

Voice mails may also be replaced by text mails. This method is already in use. The advantage of the method of data entry described above is evident when a user has to answer or to write a massage to another party. The data entry method of the invention is also dramatically enhances the use of massaging systems through mobile electronic devices such as cellular phones. One of the most known use is in the SMS.

The number of electronic devices using a telephone-type keypad is immense. The data entry method of this invention permits a dramatically enhanced data entry through the keypads of said devices. Of course this method is not limited to a telephone-type keypad. It may be used for any keypad wherein at least a key of said keypad contains more than one symbol.

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Multi-sectioned keypad

The size of a keypad using the above-mentioned data entry method, may still be minimized by using a keypad having multiple sections. Said keypad may be minimal in size (e.g. as large as the largest section, for example as large as of the size of an adult user's fingertip or the size of a small keypad key) in a closed position, and maximized as desired when the keypad is in open position (depending on the number of sections used and/or opened).

Theoretically, in closed position, the keypad may even have the size of a key of said keypad.

Fig 8 shows one embodiment of said keypad 800 containing at least three sections 801, wherein each of said sections contains one column of the keys of a telephone keypad. When said keypad is in open position, a telephone-type keypad 800 is provided. In closed position 802 said keypad may have the width of one of said sections.

Another embodiment of said keypad is shown in fig. 9. Said keypad 900 contains at least two sections 901-902 wherein a first section 901 contains two columns 911-912 of the keys of a telephone-type keypad, and a second section 902 of said keypad contains at least the third column 913 of said telephone-type keypad. When said keypad is in open position, a telephone-type keypad is provided. Said keypad, may also have an additional column 914 of keys arranged on said second section. In closed position 920 said keypad may have the width of one of said sections.

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As shown in fig. 10, another embodiment of said keypad 1000 contains at least four sections 1001-1004 wherein each of said sections contains one row of the keys of a telephone keypad. When said keypad is in open position, a telephone-type keypad is provided. In closed position 1005 the length of said keypad may the size of the width of one row of the keys of said keypad.

Fig. 11 shows another embodiment of said keypad 1100 containing at least two sections 1101-1102 wherein a first section contains two rows of the keys of a telephone-type keypad, and a second section of said keypad contains the other two rows of said telephone-type keypad. When said keypad is in open position, a telephone-type keypad is provided. In closed position 1103, the length of the keypad may be as the size of the width of one row of the keys of said keypad.

The above-mentioned multi-sectioned keypad has already been described in patent applications already filed by the inventor.

By using the above-mentioned data entry method through a multi-sectioned keypad as described, a miniaturized easy to use full data entry keypad may be provided. Such keypad may be used in many device, specially those having a limited size.

Of course, the above-mentioned symbol configuration may be used on said multi-sectioned keypad.

Fig. 12 shows another embodiment of a multi-sectioned keypad 1200. The distance between the sections having keys 1201 may be increased by any means. For example, empty (e.g. not containing keys) sections 1202, may be provided

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between the sections containing keys. This will permit more enlarged the distance between the sections when said keypad is in open position. On other hand, it also permits to have a still thinner keypad in closed position 1203.

A data entry device having integrated keypad and mouse or point and click device

To enhance the data entry method through a keypad in general and through the keypad of this invention in particular, a point and click system, hereinafter a mouse, can be integrated in the back side of an electronic device having a keypad for data entry in its front side.

Fig. 13, shows an electronic device such a cellular phone 1300 wherein a user holds in palm of his hand 1301. Said user may use only one hand to hold said device 1300 in his hand and in the same time manipulate its keypad 1303 located in front, and a mouse or point and click device (not shown) located on the backside of said device. The thumb 1302 of said user may use the keypad 1303, while his index finger 1304 may manipulate said mouse (in the back). Three other fingers 1305 may help holding the device in the user's hand.

The mouse or point and click device integrated in the back of said device may have similar functionality to that of a computer mouse. Also several keys (e.g. two keys) of either the telephone-type keypad or among the additional keys of said device may be assigned to the mouse click functions. for example, keys 1308 and 1318 may function with the integrated mouse of said device 1300 and

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have the similar functionality of the keys of a computer mouse. Said keys may have the same functionality as the keys of a computer mouse. For example, by manipulating the mouse, the user may navigate a Normal Select (pointer) indicator 1306 on the screen 1307 of said device and position it on a desired menu 1311. As for a computer mouse, said user then, for example, may tap (click) or double tap (double click) on a predefined key 1308 of said keypad (which is assigned to the mouse) to for example, select or open said desired menu 1311which is pointed by said Normal Select (pointer) indicator 1306.

Because the display of mobile devices such as cellular phones has a small size, a rotating button 1310 may be provided in said device to permit to a user to, for example rotate the menu lists. For example, after a desired menu 1311 appears on the screen 1307, a user may use the mouse to bring the Normal Select (pointer) indicator on said desired menu and select it by using a predefined key such as one of the keys 1313 of the telephone-type keypad 1303 or one of the additional keys 1308 on said device, etc.

As for a computer, then the user may press said key to open the related menu bar 1312. To select a function 1313 of said menu bar1312, the user may maintain said key pressed and after bringing the Normal Select (pointer) indicator 1306 on said function, by releasing said key, said function may be selected.

Other functionalities similar to those of a computer may be provided by using said keypad and said mouse.

Also, instead of using said keys assigned to a mouse, a user may use a predefined voice/speech or other predefined behavior(s) to replace the functions

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of said keys. For example, after positioning the Normal Select (pointer) indicator 1306 on an icon, instead of pressing a key, the user may say "select" or "open" to select or open the application represented by said icon.

Fig. 14, shows an electronic device such as a mobile phone 1400. A plurality of different icons 1411-1414 representing different applications, are displayed on the screen 1402 of said device. To select and/or open one of the applications, as for computers, by using a mouse, a user may bring the a Normal Select (pointer) indicator 1403, on a desired icon 1411. Then said user may select said icon by for example pressing once, a predefined key 1404 of said keypad. To open the application represented by said icon, the user, for example, may double tap on a predefined key 1404 of said keypad.

The mouse integrated in the backside of an electronic device may be of any type. For example, Fig.15 shows the backside of an electronic device 1500 such as the ones shown in figs. 13-14. The mouse 1501, is similar to a conventional computer mouse. It may be manipulated, as described, with a user's finger. It may also be manipulated like a conventional computer mouse, by laying the device on a surface such as a desk and swiping said mouse on said surface.

Fig. 16, shows another conventional type of mouse (a sensitive pad) integrated on the backside of an electronic device 1600 such as the ones shown in figs. 13-14. The mouse 1601, is similar to a conventional computer mouse. It may be manipulated, as described, with a user's finger. in this example, preferably as described before, while holding the device in the palm of his hand, the user uses his index finger 1602 to use (e.g. to manipulate) said mouse. Accordingly to this

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position, the user uses his thumb (not shown) to manipulate the keys of a keypad (not shown) which is located in the front side (e.g. other side) of said device.

Mobile devices should preferably, be manipulated by only one hand. This is because while the users are in motion (e.g. being in a bus or in a train) the users may use the other hand for other purposes such as holding a bar while standing in a train or using one hand to hold a newspaper or a briefcase).

By implementing the mouse in the back of a device such as a mobile phone, the user may manipulate said device and to enter data with one hand. He can use simultaneously, both, the keypad and the mouse of said device.

Of course, if he desires, said user can use his both hands to manipulate said device and its mouse.

Another method of using said device is to dispose it on a surface such as on a desk and slide said device on said surface in a same manner as a regular computer mouse and enter the data using said keypad.

It is understood that the any type of mouse including the ones described before, may be integrated in any part of a mobile device. For example, a mouse may be located in the front side of said device. Also said mouse may be located on a side of said device and being manipulated simultaneously with the keypad by fingers explained before.

It should be noted that a mouse has been used through out this discussion, however any point and click data entry device such as stylus computer integrated in an electronic device and combined with a telephone-type keypad is within the contemplation of the present invention.

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External integrated data entry unit

Also, an external integrated data entry unit comprising a keypad and mouse may be provided and used in electronic devices requiring data entry means such as keyboard (or keypad) and/or mouse. There may be provided an integrated data entry unit having the keys of a keypad (e.g. a telephone-type keypad) in front of said unit and a mouse being integrated within the back of said unit. Said data entry unit may be connected to a desired device such as a computer, a PDA, a camera, a TV, a fax machine, etc.

Figs. 19 shows a computer 1900 comprising a keyboard 1901, a mouse 1902, a monitor 1903 and other computer accessories (not shown). In some circumstances (e.g. when a user does not desire to sit down on a desk chair in front of a monitor and he prefers, for example, to lie down on his bed while interacting with said computer) instead of a large keyboard and/or corresponding mouse a user may utilize a small external integrated data entry unit. There may be provided an external data entry unit 1904 containing features such as keypad keys 1911 positioned on the front side of said data entry unit, a microphone which may be an extendable microphone 1906, a mouse (not shown) integrated within the back side of said data entry unit (described before). Said data entry unit may be (wirelessly or by wires) connected to said electronic device (e.g. said computer 1900). An integrated data entry system such as the one described before (e.g. using voice recognition systems combined with interaction of keys by a

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user) may be integrated either within the said electronic device (e.g. said computer 1900) or within said data entry unit 1904. Also a microphone may be integrated within said electronic device (e.g. computer). Said integrated data entry system may use one or both microphones located on said data entry unit or within said electronic device.(e.g. computer).

For a better view of while interacting, specially when interacting from far with an electronic device such as said computer 1900, a display unit 1905 may be integrated within said a entry unit such as said integrated data entry unit 1904 of this invention. When interacting from far with a monitor 1903 of said electronic device 1900, a user may have a general view of the display 1910 of said monitor 1903. A closed area 1908 around the arrow 1909 or another area selected by using the mouse on the display 1910 of said monitor 1903 may simultaneously be shown on said display 1905 of said data entry unit 1904. The size of said area 1908 may be defined by manufacturer or by the user. Preferably the size of said area 1908 may be closed to the size of the display 1905 of said data entry unit 1904. This may permit a closed and/or if desired a real size view of the interacting area 1908 to the user (e.g. by seeing said area on the data entry screen 1905). While having a general view of the display 1910 of the monitor 1903, a user may have a particular closed view of the interacting area 1908 which is simultaneously shown on the display 1905 of said data entry unit 1904. For example a user may use the keypad mouse (not shown, in the back of the keypad) to navigate the arrow 1909 on the computer display 1910. Simultaneously said

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arrow 1909 and the area 1908 around said arrow 1909 on said computer display 1910 may be shown on the keypad display 1905.

For an interaction such as opening a file, a user may for example, navigate an arrow 1909 on the screen 1910 of said computer an position it on a desired file 1907. Said navigated areas 1908 and said file 1907 may be seen on said data entry screen 1905. By having the display 1905 of said data entry unit 1904 closed to his eyes, a user can clearly see his interactions on the display 1905 of said data entry unit 1904 while having a general view on a large display 1910 of said electronic device 1900 (e.g. computer).

It is understood that said interaction area 1908 may be defined and vary according to different needs or definitions. For example, said interacting area may be the area around an arrow 1909 wherein said arrow is in the center of said area or said area is the area at the right, left, top, bottom , etc. of said arrow or any area on the screen of said monitor, regardless of the location of said arrow on the display of said monitor).

Fig. 20 shows a data entry unit 2000 such as the one described before being connected to a computer 2001. During a data entry such as a text entry, the area 2002 around the interacting point 2003 (e.g. cursor) is simultaneously shown on the keypad display 2004.

Figs. 21a-21b show an example of different electronic devices which may use the above described data entry unit. Fig. 21a shows a computer 2100 and fig. 21b shows a TV 2101. The data entry unit 2102 of said TV 2101 may also operate as a remote control of said TV 2101. For example, by using the mouse

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(not shown) situated in the back side of said data entry unit 2102, a user may locate a selecting arrow 2103 on the icon 2104 representing a movie or a channel and opening it by double tapping (double clicking) on a key 2105 of said data entry unit. Of course said data entry unit 2102 of said TV may also be used for data entry such as internet through TVs or sending massages through TVs, cable TVs, etc. In this case the integrated data entry system of this invention may be integrated within for example, the TV's modem 2106.

Extendable Microphone

An extendable and /or rotatable microphone may be integrated in electronic devices such as cellular phones. Said microphone may be a rigid microphone being extended towards a user's mouth.

With the advancement of the technology, new input systems and devices are coming to the market to permit easy interacting with instruments. Many of those input systems use voice/speech recognition system wherein a user speaks the data or commands to be input. Because it is a natural way to input data, voice recognition system is becoming very popular. Computers, telephones, toys, and many other instruments are equipped with this different kinds of data entry system using voice recognition systems.

Although this is a good method of input, it has an important shortcoming. It is not a discrete method of input. A user, usually, does not want others to hear what he speaks, and in the other hand people do not like other people's loud speaking.

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To overcome (or at least reduce) significantly this problem, the user must speak quietly. To not cause misinterpretation of user's voice/speech by a voice recognition system, the microphone must be closed to user's mouth.

It is the subject of this invention to provide instruments using a user's voice as data, with a microphone extending from said instruments towards the user's mouth.

There are many advantages using such a microphone. One advantage of such a microphone is that by extending said microphone towards said user's mouth and speaking closed into it the voice/speech recognition system may better distinguish and recognize said voice/speech. Another advantage is that by positioning said microphone close to user's mouth (e.g. next to the mouth), a user may speak silently (e.g. whisper) into it. This permits an almost silent and a discrete data entry. Still, another advantage of said microphone is that because of being integrated in corresponding electronic device, in order to keep said microphone in a desired position (e.g. close to a user's mouth), a user may not have to hold said microphone by his hand(s). Also, said user does not have to carry said microphone separately from said electronic device.

By combining the features such as the enhanced keypad of the invention, the mouse, the extendable microphone and the data entry method in a manner such as the manners explained before, either in an electronic device or as an external unit to be connected to an electronic device, a completely enhanced data entry system may be provided. A user, may for example, by only using one hand, hold an electronic device such as a data entry device (e.g. mobile phone, PDA,

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et.), use all of the features such as the enhanced keypad, integrated mouse, and the extendable microphone, etc., and in the same time by using his natural habitudes (e.g. pressing keys of the keypad and in needed, speaking) provide a quick, easy, and specially natural data entry.

One of the most important applications of the extendable microphone is when the data entry systems of mobile communication devices combine use of keypad and voice/speech recognition system. In this method a user interacts with a key (for example by pushing it), and in the same time he may speak for example, a symbol on said key. In order to press a key containing a desired symbol, the user may need to see the keypad. He also may need to see the data on a display of the device. In the other hand, the user may prefer to speak said symbols quietly. The extendable microphone permits to position the mobile phone far from eyes, enough to see that keypad, and in the same time to have the microphone closed to the mouth, permitting to speak quietly.

As they many people are used to, they may hold their mobile phone in one hand, while pressing the keys of the keypad with a thumb of the same hand. The second hand may be used to either hold said hand around the microphone to reduce the outside noise, or to keep the microphone in an optimal relationship with the mouth.

If the microphone of an instrument is wireless, or the member connecting it with the instrument is made from non-rigid materials, the user may hold the microphone in a manner to position it at the palm side of his hand, between two

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fingers. Then by positioning the palm o said hand around the mouth he can significantly reduce the outside noise while speaking.

It is understood that the user interface containing the data entry unit and the display, of an electronic device using a user's voice to input data, may be of any kind. For example, instead of a keypad it may contain a touch sensitive pad, or it may be equipped only with a voice recognition system without the need of a keypad.

Fig. 18, shows according to one embodiment of the invention, an electronic device 1800 such as a cellular phone or a PDA. As shown, the keypad 1801 is located in the front side of said device 1800. A mouse (not shown) is located in the backside of said device 1800, An extendable microphone 1802 is also integrated within said device. Said microphone may be extended and positioned in a desired position (e.g. next to the user's mouth) by a user. Said device may also contain a data entry method as described before. By using only one hand, a user may proceed to a quick and easy data entry with a very high accuracy. Positioning said microphone next to user's mouth, permits a better recognition of the voice/speech of the user by the system. Said user, may also speak silently (e.g. whisper) into said microphone. This permits an almost silent data entry.

In alternative embodiments of the present invention Figs.18b to 18c, show a mobile phone 1800 having a keypad 1801 and a display unit. The mobile phone is equipped with a pivoting section 1803 with a microphone 1802 installed at its end. By extending the microphone towards his mouth, the user may speak quietly

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into the phone and in the same time being capable to see the display and keypad 1801 of his phone and eventually use them simultaneously while speaking to microphone 1802.

Fig.18d, shows a rotating extendable microphone 1810 to permit a user to position the instrument at a convenient relationship to him, and in the same time by rotating and extending the microphone accordingly, to bring microphone 1810 close to his mouth or to a desired location. It must be noted that the member connecting the microphone to the instrument may have at least two sections, being extended/retracted according to each other and to the instrument. They may have folding, sliding, telescopically and other movement for extending or retracting.

Figs. 18e and 18f, shows an integrated rotating microphone 1820 being telescopically extendable. In this embodiment, the extendable section comprising microphone 1820 may be located in the instrument. When desired, a user may pull this section out and extend it towards his mouth. Microphone 1820 may also be used, when it not pulled out.

According to another embodiment of the invention as shown in Figs. 18g and 18h, the extending member 1830 containing a microphone 1831, may be a section of a multi-sectioned device. This section may be used as the cover of said device. The section comprising the microphone 1831 may itself been multi-sectioned to be extendable and/or adjustable as desired.

According to embodiment shown in Fig. 18i, an extendable microphone 1840 as described before, may be installed in a computer or similar devices.

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Also, according to another embodiment of the invention, a microphone of an instrument may be attached to a user's ring, or itself being shaped like a ring, and be worn by said user. This microphone may be connected to said instrument, either wirelessly or by wire. When in use, the user approaches his hand to his mouth and speaks.

It is understood that instruments shown in the drawings are shown as example. The extendable microphone may be installed in any instrument. It may also be installed at any location on extending section.

In communication devices, the extending section comprising the microphone may be used as the antenna of said instruments. In this case the antennas may be manufactured as sections described, and contain integrated microphones.

It must be noted that in addition to at least an extendable microphone, an instrument may comprise at least one additional regular microphone, wherein said microphones may be used separately or simultaneously with said extendable microphone.

It must be noted that the extendable member comprising the microphone may be manufactured with rigid materials to permit positioning the microphone in a desired position without the need of keeping it by hand. For better manipulation, the section comprising the microphone may also be manufactured by semi rigid or soft materials.

It must be noted that any extending/retracting methods such as unfolding/folding methods may be used.

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As described before, the integrated keypad and/or the mouse and/or the extendable microphone of this invention may also be integrated within a variety of electronic devices such as a PDA, a remote control of a TV, and a large variety of other electronic devices. For example, by using said integrated keypad and mouse within remote control of a TV, a user may point on an icon, shown on the TV screen relating to a movie and select said movie by using a predefined key of said remote control.

Also, as described, said integrated keypad and/or mouse and/or extendable microphone may be manufactured as a separated device and to be connected to said electronic devices.

Of course said keypad, alone or integrated with said mouse and/ or said extendable microphone, may be combined with a data and text entry method such as the data entry method of this invention.

Fig. 17 shows some of the electronic devices which may use the enhanced keypad, the enhanced mouse, the extendable microphone, and the data entry method of this invention.

An electronic device may contain at least one or more of the features of this invention. It may, for example, contain all of the features of the invention as described.

Data entry through a land line phone

The data entry method described before, may also be used in land-lined phones and their corresponding networks. As known, each key of a telephone keypad generates a predefined tone which is transmitted through the land line networks. There are twelve predefined tones assigned to twelve keys of telephone keypads. By using, a land line telephone and its keypad, for the purpose of a data entry such as entering text, there may be the need of additional tones to be generated. To each symbol, there may be assigned a different tone so that the network will recognize a symbol according to the generated tone assigned to said symbol.

A wrist-worn multi-sectioned data entry unit

Fig. 22a shows as example, different embodiments of a data entry units 2201-2203 of this invention as described before. To reduce the size of said data entry unit a multi-sectioned data entry unit 2202-2203 which may have a multi-sectioned keypad 2212-2222 as described before, may be provided. said multi-sectioned data entry unit may have some or all of the features of this inventions. It may also have an integrated data entry system described in this application. As example, the data entry unit 2202 comprises a display 2213 an antenna 2214 (may be extendable), a microphone 2215 (may be extendable), a mouse integrated in the beck of said data entry unit (not shown).

An embodiment of a data entry unit of this invention may be carried on a wrist. It may be integrated within a wrist worn device such as a watch or within a

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bracelet such as a wristwatch band. Said data entry unit may have some or all of the features of the integrated data entry unit of this invention. This will permit to have a small data entry unit attached to a user's wrist. Said wrist-worn data entry unit may be used as a data entry unit of any electronic device. By connecting his wrist-worn data entry unit to a desired electronic device, a user for example, may open his apartment door, interact with a TV, interact with a computer, dial a telephone number, etc.. A same data entry unit may be used for operating different electronic devices. For this purpose, an access code may be assigned to each electronic device. By entering (for example, through said data entry unit) the access code of a desired electronic device a connection between said data entry unit and said electronic device may be established.

Fig. 22b shows an example of a wrist-worn data entry unit 2290 (e.g. multi-sectioned data entry unit having a multi-sectioned keypad 2291) of this invention (in open position) connected (wirelessly or through wires 2292) to a hand-held device such as a PDA 2293. Said multi-sectioned data entry unit 2290 may also comprise additional features such as some or all of the features described in this application. In this example, there are provided a display unit 2294 an antenna 2295, a microphone 2296 and a mouse 2297.

It is understood that said multi-sectioned keypad may be detached from the wrist worn device/bracelet 2298. For this purpose different detachment/attachment known to people skill in the art may be provided. For example, as shown in fig. 23a, a housing 2301 for containing said data entry device may be provided within a bracelet 2302. Fig. 23b shows said housing

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2303 in open position. A detachable data entry unit 2304 may be provided within said housing 2301. Fig 23c shows said housing in open position 2305 and in close position 2306. In open position (e.g. when using said data entry unit), part of the elements 2311 (e.g. part of the keys and/or display, etc) of said data entry unit may lye down within the cover 2312 of said housing.

According to one embodiment of the invention, a device such as a wristwatch 2307 may be provided in the opposite side on the wrist within the same bracelet. For example, there may be provided a wristwatch band having a housing to contain a data entry unit. Said wristwatch band may be attached to any wrist device such as a wristwatch, a wrist camera, etc. The housing of the data entry device may be located on one side 2308 of a wearer's wrist and the housing of said other wrist device may be located on the opposite side 2309 of said wearer's wrist. To attach said wristband to a device such as a wristwatch the traditional wristwatch band attachment means 2310 (e.g. bars) may be provided.

The above mentioned wristband housing may also be used to contain any other wrist device. for example, instead of containing a data entry unit, said wrist housing may be adapted to contain a variety of electronic devices such as a wristphone.

There may be a lot of advantages when using a wrist-worn data entry unit of this invention. for example, a user may carry an electronic device in for example, his pocket, and having a display unit (may be flexible) of said electronic device in his hand. The interaction with said electronic device may be provided through said wrist-worn data entry unit. In another example, the wrist-worn data

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entry unit of this invention may be used to operate an electronic news display (PCT Patent Application No. PCT/US00/29647, filed on October 27, 2000, regarding an electronic news display is incorporated herein by reference).

Thus, while is shown and described and pointed out fundamental novel features of the inventions as applied to alternative embodiments thereof, it will be understood that various omissions and substitutions and changes in the form and details of the disclosed invention may be made by those skilled in the art without departing from the spirit of the invention. It is to be understood that the drawings are not necessarily drawn to scale, but that they are merely conceptual in nature. For example, instead of providing a separate pressure system to each key of a keypad, a single pressure sensitive system (e.g. a pressure sensitive pad) may be provided with all of them (e.g. a single large pad above or under the keys). Also a user may interact with a key by other means than his fingers. For example, said user may use a pen to press a key.

The data entry method of this invention may also use other data entry means. For example, instead of assigning the symbols to the keys of a keypad, said symbols may be assigned to other objects such as the fingers (or portions of the fingers) of a user. These subjects and the data entry method mentioned in this application, have already been described in detail in the incorporated reference PCT Patent Application, No PCT/US00/29647, filed on Oct.27, 2000.

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Extendable Display Unit

According to one embodiment of the invention an extendable display unit may be provided within an electronic device such as data entry unit of the invention or within a mobile phone. Fig. 24a shows an extendable display unit 2400 in closed position. This display unit may be made of rigid and/or semi rigid materials and may be folded or unfolded for example by corresponding hinges 2401, or being telescopically extended or retracted, or having means to permit it being expanded and being retracted by any method.

Fig 24b shows a mobile computing device 2402 such as a mobile phone having said extendable display 2404 of this invention, in open position, When open, said extended display unit may have the width of an A4 standard paper permitting the user to see and work on a real width size of a document while, for example, said user in writing a letter with a word processing program or browsing a web page.

The display unit of the invention may also be made from flexible materials. Fig 25a shows a flexible display unit 2500 in closed position.

It is understood that the display unit of the invention may also display the information on at least part of it's other (e.g. exterior} side 2505. This is important because in some situations a user may desire to use the display unit without expanding it.

Fig. 25b shows an electronic device 2501 having flexible display unit 2500 of the invention, in open position.

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By having an electronic device such as the data entry unit of the invention, a mobile phone, a PDA, etc., having at least one of the enhanced features of the invention such as an extendable/non extendable display unit comprising a telecommunication means as described before, a mouse of the invention, an extendable microphone, an extendable camera, a data entry system of the invention, a voice recognition system, or any other feature described in this application, a complete data entry/computing device, which may be held and manipulated by one user's hand, may be provided. This is very important because as is well known that in mobile environment computing/data entry at least one of the user's hand must be free.

Extendable Camera

As described for extendable microphone, an electronic device may also be equipped with an extendable camera. For example, for the data entry system of the invention combining keys presses and lip reading (instead or in addition to voice/speech of the user) an extendable camera may be provided in corresponding electronic device or data entry unit..

Fig.26 shows a mobile computing device 2600 equipped with a pivoting section 2601. Said pivoting section may have a camera 2602 and/or a microphone 2603 installed at, for example, its end. By extending the camera towards his mouth, the user may speak to the camera and the camera may transmit images of the user's lips for example, during data entry of the invention using combination

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of key presses and lips. The user, in the same time may be capable to see the display and the keypad of his phone and eventually use them simultaneously while speaking to the camera. Of course the microphone installed on the extendable section may transmit the user's voice to the voice recognition system of the data entry system.

The extendable section 2601 may contain an antenna, or itself being the antenna of the electronic device.

Also, the extendable microphone and/or camera of the invention may be detachably attached to an electronic device such as a mobile telephone or a PDA. This is because in many situations manufacturers of electronic devices (such as mobile phones) do not desire to modify their hardware for new applications.

According to one embodiment of the invention, the external pivoting section comprising the microphone and/or a camera may be a separate unit being detachably attached to the corresponding electronic device. Fig. 27 shows a detachable unit 2701 and an electronic instrument 2700, such as a mobile phone, being in detached position. The detachable unit 2701 may comprise any one of a number of component, including but not limited to, a microphone 2702, a camera 2703, a speaker 2704, an optical reader (not shown) or other components necessary to be closed to the user for better interaction with the electronic instrument. The unit may also comprise at least one antenna or itself being an antenna. The unit may also comprise attachment and/or connecting means 2705, to attach unit 2701 to electronic device 2700 and to connect the components available on the unit 2701 to electronic instrument 2700. For attaching and

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connecting purposes, attachment and connecting means 2705 may be adapted to use the ports 2706 available within an electronic device such as a mobile phone 2700 or a computer, the ports being provided for connection of peripheral components such as a microphone, a speaker, a camera, an antenna, etc. It is understood that ports 2706 may be the standard ports such as a microphone jack or USB port, or any other similar connection means available in electronic instruments. In this case, the attachment/connecting means may, for example, be standard connecting means which plug into corresponding port(s) available within the electronic instrument.

It is understood that the attachment and/or connecting means of the external unit may be provided to have either mechanical attaching functionality or electrical/electronic connecting functionality or both. As shown in Fig. 27a, for example, the external unit 2701 may comprise a pin 2705 fixedly positioned on the external unit for mechanically attaching the external unit to the electronic instrument. The pin may also electrically/electronically connect for example, the microphone component 2702 available within the unit 2701 to the electronic instrument shown before. In addition to the pin, the external unit may contain another connector 2707 such as a USB connector, connected by wire 2708 to for example, a camera 2703 installed within the external unit 2701. In this case, the connector 2707 may only electronically/electrically connect the unit 2701 to the electronic instrument.

For better mechanical attachment more that one port may be used by attachment and connecting means of the external unit. For example, the

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attachment and connecting means may comprise two attachment means, such as two pins fixedly positioned on the external unit wherein a first pin plugs into a first port of the electronic instrument corresponding to for example an external microphone, and a second pin plugs into the port corresponding to for example an external speaker.

Fig. 27b shows the detachable external unit 2701 and the electronic instrument 2700 of the invention, in attached position.

After attaching the external unit 2701 to the electronic instrument 2700 (for example, by plugging the pin 2705 into corresponding port 2706) the user may adjust the external unit 2701 in a desired position by extending and rotating movements as described before in this application for extendable microphone and camera. Again, it must be noted that the detachable unit of the invention may have characteristics similar to those of the extendable section of the invention as described before for the external microphone and camera in this application. For example, the detachable unit 2701 of the invention may be multi-sectioned having at least two sections 2710-2711, wherein each section having movements such as pivoting, rotating and extending (telescopically, foldable/unfoldable), relating to each other and to the external unit. Attaching sections 2712-2714 may be used for these purposes.

The detachable unit as described permits to add external/perpheral components to an electronic instrument and use them as they were part of the original instrument. This firstly permits to use the unit without holding the components in hand or attaching it to user's body (e.g. a headphone which must

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be attached to user's head) and secondly, it permits to add the components to the electronic instrument without obliging the manufacturers of the electronic instruments (such as mobile phones) to modify their hardware.

The data entry method of this invention may also use other data entry means. For example, instead of assigning the symbols to the keys of a keypad, said symbols may be assigned to other objects such as the fingers (or portions of the fingers) of a user. Also instead of (or in addition to) voice/speech input, the system may recognize the data input by reading (recognizing the movements of) the lips of the user in combination with/without key presses. The user may press a key of the keypad and speak a desired letter among the symbols on said key. By recognizing the movements of the user's lips speaking said letter combined with said key press, the system may easily recognize and input the intended letter.

Also as mentioned, example given in method of configuration described in this application were showed as samples. Variety of different configurations and assignment of symbols may be considered depending on data entry unit needed. The principle in this the method of configuration is to define different group of symbols according to different factors such as frequency of use, natural pronunciation, natural non-pronunciation, etc, and assign them accordingly assigning them priority rates. The highest priority rated group (with or without speaking) is assigned to easiest and most natural key interaction (e.g. a single press). This group also includes the highest ranked non-spoken symbols. Then the second highest priority is assigned to second less easier interaction (e.g. double press) and so on.

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With continuous reference to data entry system described before, the assignment of symbols to the keys of a keypad may be made in manner to still more enhance the recognition by voice/speech or lip-reading systems. Fig. 28 shows a keypad 2800 wherein letter symbols having closed pronunciation are assigned to the keys of said keypad in a manner to avoid ambiguity between them. As shown, letters having closed pronunciations "c" & "d", "j" & "k", "m" & "n", "v" & "t", are separated and placed on different keys. This will help the speech recognition system to more easily recognize said letters. For example, to select the letter "c", a user may press the key 2801 and says "c". To select the letter "d", the user presses the key 2802 and says "d". Other letters having closed pronunciations such as "b" & "p", "t" & "d", "f" & "s", are also assigned to different keys.

Embedded speech recognition systems for small devices are designed to use memory as less as possible. Separating symbols having resembling pronunciation and assigning them to different keys, dramatically simplifies the recognition algorithms resulting the use of less memory.

With continuous reference to Fig. 28, as shown, the configuration of letters is provided in a manner to maintain the letters a-z in continuous order (e.g. a,b,c.....z). Configuration of symbols on the keypad 2800 is made in a manner to keep it as similar as possible to a standard telephone-type keypad. It is understood that this order may be changed if desired.

Also, separation of resembling lip-articulated symbols may help lip-reading (lip recognition) systems to more easily recognize them. For example,

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assigning letters "j" & "k" to different keys will dramatically ease their recognition.

It is understood that for recognizing a spoken symbol such as a letter, more than one image of user's lips at different times during speaking said letter may be provided to lip recognition/reading system.

Lip reading (recognition) system of the invention may use any image-producing and image-recognition processing technology for recognition purposes. For example, as mentioned before, a camera may be used to receive image(s) of user's lips while said user is saying a symbol such as a letter and is pressing the key corresponding to said symbol on the keypad. Other image producing and/or image capturing technologies may also be used. For example, instead of a camera, a projector and receiver of means such as light or waves may be used to project said means to the user's lips (and eventually, face) and receives back said means providing a digital image of user's lips (and eventually user's face) while said user is saying a symbol such as a letter and pressing the key corresponding to said symbol on the keypad.

The data entry system of the invention which combines key press and user behavior (e.g. speech) may use different behavior (e.g. speech) recognition technologies. For example, in addition to movements of the lips, the pressing action of the user's tongue on user's teeth may be detected for better recognition of the speech.

According to one embodiment of the invention, as shown in fig. 29, instead of (or in addition to) a camera, the lip reading system of the invention

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may use a touch/press sensitive component 2900 removabley mounted on user's denture and/or lips. Said component may have sensors 2903 distributed within its surface to detect a pressure action on any part of it permitting to measure the size, location, pressure measure, etc., of the impact between the user's tongue and said component. Said component may have two sections. A first section 2901 being placed between the two lips (upper and lower lips) of said user and a second 2902 section being located on the user's denture (preferably the upper front denture). An attaching means 2904 permits to attach/fix said component on user's denture.

Fig. 29a shows a sensitive component 2910 as described hereabove, being mounted on a user's denture 2919 in a manner a section 2911 of the component is located between the upper and lower lips of said user (in this figure, the component, the user's teeth and tongue are shown outside user's body). Said user may press the key 2913 of the keypad 2918 which contains the letters "abc", and speak the letter "b". By saying "b" the lips 2914-2915 of the user press said sensitive section 2911 between the lips. The system recognizes that the intended letter is the letter "b" because saying the two other letters (e.g. "ab") do not require pressing the lips on each other. If the user presses the key 2913 and pronounces the letter "c", then the tongue 2916 of the user will slightly press the inside portion 2912 of the denture section of the component located on the front user's upper denture. The system will recognize that the intended symbol is the letter "c", because other letters on said key (e.g. "bc") do not require said pressing action on said portion of the component. If the user presses the key 2913 and says the letter "a", then no pressing action will be applied on said component.

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Then the system recognizes that the intended letter is the letter "a". In other example, if the user presses the key 2917 and says the letter "j" the tongue of the user presses the inside upper portion of the denture section of the component. If the user presses the key 2917 and says the letter "l", then the tongue of the user will press almost the whole inside portion of the denture section of the component. In this case, almost the whole sensors distributed within the inside portion of the denture section of the component will be pressed and the system recognizes that the intended letter is the letter "l".

The above-mentioned lip reading/recognition system permits a discrete and efficient method of data input with high accuracy. This data entry system may particularly be used in sectors such as the army, police, or intelligence.

Hereafter an example of a letter input recognition system through a telephone-type keypad, according to one embodiment of this invention:

ABC key		
A no pressure	B lip section pressed	C upper inside portion of the denture section is slightly pressed
DEF key		
D whole inside denture section is pressed	E no pressure	F lip section pressed
GHI key		
G upper inside portion of the denture section	H upper inside of portion of the denture section	I no pressure

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	is strongly pressed	is slightly pressed		
	JKL key			
	J	K	L	
5	upper inside portion of the denture section is slightly pressed	no pressure	whole inside denture section is pressed	
	MNOkey			
10	M	N	O	
	lip section pressed	whole inside denture section pressed	no pressure	
	PQRSkey			
15	P	Q	R	S
	lip section pressed	lip section pressed (on sides)	no pressure	upper inside portion of the denture section is slightly pressed
20				
	TUVkey			
	T	U	V	
	whole inside denture section is pressed	lip section pressed (on sides)	lip section pressed	
25				
	WXYZkey			
	W	X	Y	Z (zed)
	lip section pressed	upper inside portion of denture section is pressed	no pressure	whole inside portion of the denture is pressed

35 It must be noted that the table above is only shown as an example to show the easiness of distinguishing the letters by saying a desired letter (while using the described hardware) and pressing the corresponding key. It is understood that other distinguishing parameters such as the timing of the pressure on the hardware (e.g. when saying "g" or saying "h", both being on the same key and 40 maybe having similar pressure levels) based on this system may be taken in consideration by the recognition system and people skilled in the art. Also, saying

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other symbols such as numbers (e.g. 0-9) by the user and recognizing them may be considered by the above-mentioned system.

In addition, the sensitive component of the invention may be connected to processing device (e.g. a cellphone) wirelessly or by means wires. If it is connected wirelessly, the component may contain a transmitter for transmitting the pressure information. The component may further comprise a battery power source for powering its functions,

As described before, the invention combines key presses and speech for improved recognition accuracy. In one embodiment, a grammar is made on the fly to allow recognition of letters corresponding only to the key presses.

Usually, during data (e.g. text) entry by voice/speech, a microphone/transducer perceives the user's voice/speech and transmits it to a processor of a desired electronic device for recognition process by a voice/speech recognition system. A great obstacle (specially, in the mobile environment) for an efficient speech to data/text conversion by the voice/speech recognition systems is the poor quality of the inputted audio, said poor quality being caused by the outside noise. It must be noted that the microphone "hears" everything without distinction.

Many efforts have been made by researchers to distinguish and eliminate an outside noise from a desired audio. Until now those efforts have permitted to only partially reduce the outside noise but still much more work must be done to achieve an acceptable result. Unfortunately, the current noise cancellation/reduction technologies also reduce the quality of the desired audio,

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making said audio inappropriate for recognition by the voice/speech recognition systems.

To reduce (or even completely eliminate) the outside noise during data entry into an electronic device by voice/speech input, without degrading the quality of said voice/speech input, an ear-integrated microphone/transducer unit positioned in a user's ear, can be provided. Said microphone/transducer may also permit a better reception quality of the user's voice/speech, even if said user speaks low or whispers.

As is well known, when humans speak, the bone vibrations caused by, and corresponding to, said speech are conducted to ear resulting the air vibrations corresponding to said speech in the inner ear and in the ear canal.

According to one method, said air vibrations may be perceived by an ear-integrated microphone positioned in the ear, preferably in the ear canal. According to another method, said ear bone vibrations, themselves, may be perceived from the inner ear by an ear-integrated transducer positioned in the ear.

Fig. 30 shows a microphone/transducer unit 3000 designed in a manner to be integrated within a user's ear in a manner that the microphone/transducer component 3001 locates inside the user's ear (preferably, the use's ear canal).

Preferably, in addition to microphone/transducer component 3001, said unit 3000 may also have hermetically isolating means 3002 wherein when said microphone 3001 is installed in a user's ear (preferably, in the user's ear canal), said hermetically isolating means 3002 may isolate said microphone from the outside (ear) environment noise, permitting said microphone 3001 to only

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perceive the user's voice/speech formed inside the ear. The outside noise which is a major problem for voice/speech recognition systems will dramatically be reduced or will even be completely eliminated.

The user may adjust the level of hermetically isolation as needed. For example, to cancel the speech echo in the ear canal said microphone may be less isolated from outside ear environment by slightly extracting said microphone unit from said user's ear canal. The microphone unit may also have integrated isolating/unisolating level means.

Said microphone/transducer 3001 may be connected to a corresponding electronic device, by means of wires 3003, or by means of wireless communication systems. The wireless communication system may be of any kind such as blue-tooth, infra-red, RF, etc

The above-mentioned, ear integrated microphone/transducer may be used to perceive the voice/speech of a user during a voice/speech-to-data(e.g. text) entry system using the data entry system of the invention combining key press and corresponding speech, now named press-and-speak (KIKS) technology. By pressing a key and saying the desired symbol (e.g. a letter) assigned to said key, as described before, the voice/speech recognition system tries to match said speech to one of speech patterns of only few symbols assigned to said key. In this case, even if an ear-integrated microphone/transducer has lower quality audio perception than a standard microphone, the quality of spoken symbols perceived by said ear-integrated microphone/transducer will still be fair enough to permit

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the voice/speech recognition system to easily recognize a spoken symbol among said few symbols on that key.

According to one embodiment of the invention, as shown in fig. 31, an ear-integrated microphone 3100 may be provided and be connected to a mobile electronic device such as a mobile phone 3102. As shown, the microphone 3101 is designed in a manner to be positioned into a user's ear canal and perceive the user's speech/voice vibrations produced in the user's ear when said user speaks. Said speech may then be transmitted to said mobile phone 3102, by means of wires 3103, or wirelessly.

By being installed in the user's ear and having hermetically isolating means 3104, said microphone 3101 will only perceive the user's voice/speech. The outside noise which is a major problem for voice/speech recognition systems will dramatically be reduced or even completely be eliminated. As mentioned before, the level of isolation may be adjustable, automatically, or by the user.

For example, when a user presses a key 3105 and speaks the letter "k" which is located on said key, the vibrations of said speech in the user's ear may be perceived by said ear-integrated transducer/microphone and be transmitted to a desired electronic device. The voice/speech recognition system of the invention has to match said speech to already stored speech patterns of a few symbols located on said key (e.g. in this example, "J, K, L, 5"). Even if the quality of said speech is not good enough (e.g. because the user spoke low), said speech could be easily matched with the stored pattern of the desired letter.

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As just noted, another advantage of this system is that the user may speak low or even whisper. Because on one hand, the microphone is installed in the use's ear and directly perceives the user's voice without being disturbed by outside noise, and on the other hand the recognition system tries to match a spoken symbol to only few choices, even if a user speaks low, whispers, the quality of the user's voice will still be good enough for use by the voice/speech recognition system. For the same reasons the recognition system may be user-independent. Of course, training the system with the user's voice (e.g. speaker dependent method) will cause greatly better recognition accuracy rate by the recognition system.

In addition to the microphone/transducer, the ear-integrated unit may also contain a speaker located beside the microphone/transducer and also being integrated within the user's ear for listening purposes.

According to one embodiment of the invention, as shown in fig. 32, an ear-integrated microphone and speaker 3200 can be provided in a manner that the microphone 3201 installs in a first user's ear (as described here-above) and the speaker 3202 installs in a second user's ear.

The above specifications should not be construed as limiting the scope of the invention but merely describing some of the preferred embodiments of the invention. many variations are be considered within the scope of the present invention. For example, in the example of the ear-integrated unit of the Fig. 32, both ears may be provided by both, microphone and speaker components. In another example, when said ear-integrated unit is wirelessly connected to a

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corresponding electronic device, a buttery power source may be provided within said ear-integrated unit. Also for better speech reception quality, the ear-integrated microphone unit of the invention may also comprise at least an additional standard microphone situated outside of the ear (for example, on the transmitting wire). The inside ear microphone combined with the outside ear microphone may provide more audio signal information to the speech/voice recognition system of the invention. it must also be noted that the data entry system of the invention may use any microphone or transducer using any technology to perceive the inside ear speech vibrations.

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As previously mentioned, a method of general data entry combining key press and speech (e.g. according to a user's voice or lip movements) has been explained in PCT application PCT/US00/29647, filed on October 27, 2000.

As described in said application, by pressing a key and speaking or not speaking a desired symbol such as a character among a group of symbols assigned to said key, said desired symbol may be selected. For example, for entering the word "morning" through a standard telephone-type keypad 3300 (see Fig 33) a user may.

-press the key 3308 and say 'm'
-press the key 3308 and say 'o' ;
-press the key 3306 and say 'r' ;
-press the key 3308 and say 'n' ;
-press the key 3303 and say 'i' ;
-press the key 3308 and say 'n' ;
-press the key 3303 and say 'g'.

By speaking a word, letter by letter (or symbol by symbol), and pressing the corresponding keys, said word may be inputted.

The data entry system described in PCT/US00/29647 may permit a keyboard having reduced number of keys (e.g. telephone keypad) to act as a full-sized PC keyboard (e.g. one pressing action per symbol).

- **Word by Word Data Entry System**

To enhance the above-mentioned data entry system, a word level data entry system has been proposed in said PCT application. In said application,

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there was described that a user can enter a word by speaking said word and pressing the keys corresponding to the letters constituting said word.

The speech of each word in a language may be constituted of a set of phonemes(s) wherein said set of phoneme(s) comprises one or more phonemes. Fig. 34 shows as an example, a dictionary of words 3400 wherein for each entry (e.g. word) 3401, its character set (e.g. its corresponding chain of characters) 3402, relating key press values 3403 (e.g. using a telephone keypad such as the one shown in fig. 33), phoneme set 3404 corresponding to said word, and speech model 3405 (to eventually be used by a voice/speech recognition system) of said phoneme set are shown.

According to one method of speech (e.g. voice) recognition, when a user speaks a word, his speech may be compared with memorized speech models, and one or more best matched models will be selected by the system. According to another method of speech recognition, when a user, for example, speaks a word, his speech may be recognized based on recognition of a set of phonemes constituting said speech.

Then the word(s) (e.g. character sets) corresponding to said selected speech model(s) or phoneme-set may be selected by the system. If the selection contains one word, said word may become the final selection. If the selection comprises more than one word, then said words may be presented to the user (e.g. in a list printed at the display) and the user may select one of them by for example pressing a "select" key.

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The above-mentioned method of recognition of words based on their speech is described only as an example. It is understood that other methods of recognition by speech may be considered by the people skilled in the art.

Recognizing a word based on its speech only, is not an accurate system. There are many reasons for this. For example, many words may have substantially similar, or confusing, pronunciations. Also factors such as the outside noise may result ambiguity in a word level data entry system. Inputting arbitrary words by voice requires complicated software, taking into account a large variety of parameters such as accents, voice inflections, user intention, or noise interaction. For these reasons speech recognition systems are based on recognition of phrases wherein for example, words having similar pronunciations may be disambiguated in a phrase according to the context of said phrase. Speech recognition systems based on recognition of phrases, also, require large amount of memory and CPU use, making their integration in small devices such as mobile phones, impossible at this time.

The press and speak technology invented by this inventor and described in different PCT and US patent applications, may solve the above-mentioned problems. In addition to/combination with a character by character entry system as described in said applications, a word-level data entry technology of the invention may provide the users of small/mobile/fixed devices with a natural quick (word by word) text/data entry system.

As mentioned, in the PCT application PCT/US00/29647, there was described that a user may speak a word while pressing the keys corresponding to the letters constituting said word. There was also mentioned that for this purpose

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a word dictionary data base may be used. According to that and by referring to the fig. 33, as an example, when a user speaks the word "card" and presses the corresponding keys (e.g. keys 3302, 3302, 3306, 3309 of the telephone-type keypad), the system may select from a dictionary database (e.g. such as the one shown in fig. 34), the words corresponding to said key presses. In this example, the same set of key presses may also correspond to other words such as "care", "bare", "base", "cape", and "case". The system then, may compare the user's speech (of the word) with the speech (memorized models or phoneme-sets) of said words which correspond to the same key presses and if one of them matches said user's speech, the system selects said word. If speech of non of said words matches the user's speech, the system then, may select the word (or words), among said words, that its (their) speech best match(es) said user's speech.

According to this method, the recognition system will select a word among only few candidates (e.g. 6 words, in the example above). As result the recognition becomes easy and the accuracy of the speech recognition system dramatically augments, permitting a general word-level text entry with high accuracy. It must also be noted that speaking a word while typing it is a human familiar behavior.

According to another embodiment of the invention, for entering a word, a user may press few (e.g. one, two, and if needed, more) keys corresponding to the characters of at least a portion of said word, (preferably, the beginning) and (preferably, simultaneously) speak said word. According to said key presses and said speech, the system may recognize the intended word. For this purpose, according to one method, for example, the system may first select the words of

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the dictionary database wherein the corresponding portion characters of said words correspond to said key presses, and compares the speech of said selected words with the user's speech. The system, then selects one or more words wherein their speech best matches with said user's speech. Selecting the words existing in a dictionary of words database according to at least few key presses corresponding to at least the beginning characters of said words, dramatically reduces the number of said selected words to be compared with the user's speech. This permits a very high accuracy of the input of a desired word. According to another method, for example, the system may first select the words of the dictionary wherein their speech best match said user's speech. The system then, may evaluate said at least the beginning characters (evaluating to which key presses they belong) of (the character sets constituting) said words with said user's corresponding key presses to finally select the character set(s) which match said user's key presses.

In the above-mentioned embodiments, if the selection contains one word, said word may become the final selection. If the selection comprises more than one word, then said words may be presented to the user (e.g. in a list printed at the display) and the user may select one of them by for example pressing a "select" key. It is understood that the systems of inputting a word by combination of key presses and speech and selection of a corresponding word by the system as just described, are demonstrated as examples. Obviously, for the same purpose, other systems based on the principles of the data entry systems of the invention may be known and considered by people skilled in the art.

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The above-mentioned methods of speaking a word and pressing the keys corresponding to the characters constituting at least part of said word, and comparing said key presses with the key presses corresponding to the letters of the words in a dictionary of words, requires the use of a substantial amount of memory. Having stored the phoneme sets/ speech (e.g. models) of all of the words available in a language, a database of the chain of characters corresponding to said words available in one or more languages, and also having a data base of the key presses corresponding to said words available in said dictionary data base require large amount of memory.

Also, as described in the prior applications, according to data entry system of the invention a symbol, such as a punctuation mark, may be assigned to a key of the keypad and be inputted as default by pressing said key without speaking a speech. In the word level data entry system of the invention as described before, a user may finish to speak a word before finishing to enter all of its corresponding key presses. This may confuse the recognition system because the last key presses not covered by user's speech may be considered as said default characters. There are some solutions to overcome this problem. For example, a user may first speak a word and then press the corresponding keys. This may indicate to the system that the set of key presses accruing after the speech, correspond to said speech.

In another example, the system may exit the text mode and enter into another mode (e.g. special character mode) such as a punctuation/function mode, by a predefined action such as, for example, pressing a mode key. According to this example, in said text mode, the system may consider all of the key presses as being corresponding to the last speech. By pressing a key while the system is in

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a special character mode, a symbol such as a punctuation mark may be entered at the end (or any other position) of the word, also indicating to the system the end of said word.

As explained in said PCT applications, to a key of a keypad at least one special character such as punctuation marks, space character, or a functions, may be assigned. By a single press on a key of said keypad without speaking, a symbol such as a punctuation mark on said key may be inputted. A double press on the same key without speech may provide another (e.g. punctuation_mark) symbol assigned to said key.

- **Data Entry System Based on sub-speeches**

There must be considered that when a user speaks a word while typing it, he naturally, may break said speech of said word into one or more sub-speech portions (e.g. while he types the letters corresponding to each sub-speech) according to for example, the syllables of said speech. For example, while typing the word "morning" using a keyboard such as a keypad, the user may naturally, first say a first sub-speech, "mor" and/while he presses the corresponding keys. Then the user may pronounce a following sub-speech, "ning" and type the corresponding keys. For easier demonstration, in this application, the word "sub-speech" is used for the speech of a portion of the speech of a word. For example, the word "perhaps", may be spoken in two sub speeches "per" and "haps". Also for example, the word "pet" may be spoken in a single sub-speech, "pet".

Also, for example, for entering the word "playing", the user may first pronounce the phonemes corresponding to the first syllable (e.g. "ple") while

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typing the keys corresponding to the letters "pla", and then pronounce the phonemes corresponding to the second syllable (e.g. "ying") while typing the set of characters "ying".

It must be noted that one user may divide a word into portions differently from another user. Accordingly, the sub-speech and the corresponding key presses, for each portion may be different. After completing the data (e.g. key press and sub-speech) entry of all portions of said word by said users, the final results will be similar.

In the above-mentioned example, said another user may pronounce the first portion as "plā" and press the keys of corresponding character set, "play". He then, may say "ing' and press the keys corresponding to the chain of characters, "ing". Also for example, a third user may enter the word "playing" in three sequences of sub-speeches and key presses. Said user may say, "ple", "yin", and "g" (e.g. spelling the character "g" or pronouncing the corresponding sound) while typing the corresponding keys. It is understood that the most natural way of dividing a word in different sequences of speech and key presses is that each sequence of speech correspond to a syllable of said word. Therefore, it must be noted that even though in many paragraphs of this application we note a syllable as a portion/sequence of a word, the data entry system of the invention applies to any form of division of a word in one or more portions.

According to the above-mentioned principles, for example, the word "trying' may be pronounced in two portions (e.g. syllables) "trī", and "ing". Also for example, the word "playground" may be divided and inputted in two portions (e.g. according to its two syllables), "plā", and "ground" (e.g. in many

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paragraphs of this application, phonemes (e.g speech sounds) are demonstrated by corresponding characters according to Webster's dictionary).

As it is shown in the examples above, part of the speech of different words in one (or more) languages may have similar pronunciations (e.g. being composed by a same set of phonemes). For example, the words, "trying", and "playing" have common sub-speech portion "ing" (or "ying") within their speech.

According to the above-mentioned principles, there may be created a method of data entry wherein by considering/memorizing predefined sets of phonemes/speech-models corresponding to sub-speeches of a word and considering at least part of the key presses corresponding to the character-sets assigned to corresponding sets of phonemes/speech-models, recognition of entire words in a press and speak data entry system of the invention may become effective. Fig. 35 shows an exemplary dictionary of phoneme-sets (e.g. sets of phonemes) 3501 corresponding to sub-speeches of a whole words dictionary 3502, and a dictionary of character sets 3503 corresponding to the phoneme-sets of said phoneme-set dictionary 3501, also comprising a dictionary of key press values (according to a telephone keypad) 3504 corresponding to said dictionary of character sets 3503 corresponding to said dictionary of phoneme-sets 3501. According to different embodiments of the invention, one or more of these data bases may be used by the data entry system of the invention.

Because in many cases, a same phoneme set (or sub-speech model) may be used in order to recognize different words (having the same sub-speech pronunciation in their speech), less memorized phoneme-sets/speech-models are

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required for recognition of entire words available in one or more dictionary of words, reducing the amount of the memory needed. This will result in assignment of reduced number of phoneme-sets/character-sets to the corresponding keys of a keyboard such as a telephone-type keypad and will, dramatically, augment the accuracy of the speech recognition system (e.g. of an arbitrary text entry).

Fig. 36 shows exemplary samples of words of English language 3601 having similar speech portions 3602. As shown, four short phoneme sets 3602, may produce the speech of at least seven entire words 3601. It is understood that said phoneme sets 3602 may represent part of speech of many other words in English or other languages, too.

Based on the above-mentioned principles, a natural press and speak data entry system using reduced number of phoneme sets for entering any word (e.g. general dictation, arbitrary text entry) through a mobile device having limited size of memory (e.g. mobile phone, PDA) and limited number of keys (e.g. telephone keypad) may be provided. The system may also enhance the data entry by for example, using a PC keyboard for fixed devices such as personal computers. In this case, (because a PC keyboard has more keys), still more reduced number of phoneme sets will be assigned to each key, augmenting the accuracy of the speech recognition system. Hereafter, different detailed embodiments of the invention are described.

All Keys-At Least Part of the Phonemes

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According to one embodiment of the invention, a user may divide the speech of a word into different sub-speeches wherein each sub-speech may be represented by a phoneme-set corresponding to a chain of characters (e.g. a character-set) constituting a corresponding portion of said word. By speaking each phoneme set and/while pressing the keys corresponding to the letters corresponding to said phonemes-set/character-set and repeating (in order, from fist to last) this procedure for all of (or at least part of) said sub-speeches, said entire word (e.g. in form of a chain of characters) may be inputted.

As shown in Fig. 33, for example, the letter "t" is located on the key 3301 of the keypad 3300. To said key different sets of phonemes such as "tē", "ti", "ta", "to", etc. (in this example, said phoneme-sets correspond to character-sets starting with said letter "t), and/or corresponding speech models may be assigned (see table of fig. 37). Pronouncing "tē" may correspond to different sets of letters such as "tea", "tee", or even "the" (for example, if the user is not an American/English native). As an example, to produce the word "teabag" a user may press the "t" key 3301 and say "tē" and continue to press the remaining keys corresponding to the remaining letters, "ea". According to one method, the system may compare the speech of the user with the speech (e.g. models) or phoneme-sets assigned to the first pressed key (in this example, "t" key 3301). After matching said user's speech to one (or more) of said phoneme-sets/speech-models assigned to said key, the system selects on or more of the character-set(s) assigned to said phoneme set(s)/speech-model(s). As mentioned, in this example, a same speech may correspond to two different sets of characters, one corresponding to the letters "tea" (e.g. key presses value 832) and the other corresponding to letters "tee" (e.g.

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key presses value 833). The system compares (e.g. the value of) the keys pressed by the user with the (e.g. values of) the key presses corresponding to the selected character sets and if one of them matches the user key presses the system chooses it to eventually being inputted/outputted. In this example the letters "tea" may be the final selection for this stage. An endpoint (e.g. end of the word) signal such as a space key press may inform the system that the key presses and speech for the current entire word are ended.

It must be noted that a phoneme-set (e.g. "tak"), representing a chain of characters (e.g. tac), may preferably be assigned to the same key that another phoneme (e.g. "t"), representing the first character (e.g. "t") of said chain of characters is assigned. Also, a single phoneme (e.g. "th"), represented by a chain of letters (e.g. "th"), and representing a chain of characters (e.g. "th"), may preferably be assigned to the same key that another phoneme (e.g. "t"), representing the first character (e.g. "t") of said chain of characters is assigned.

In the above-mentioned example, the selection is not final (e.g. so the user does not provide said end-point). The user then may press the key 3302 corresponding to the letter "b" (e.g. the first character in the following syllable in the word) and says "bag" and continue to press the remaining keys corresponding to the remaining letters "ag". The system proceeds like before and selects the corresponding character set, "bag". The user now, signals the end of the word by for example, pressing a space key.

By saying "tē" and pressing the keys 3301, 3309, 3302 (e.g. key values "8, 3, 1") and then saying "bag" and pressing the keys 3302, 3302, 3303 (e.g. key values "1, 1, 4"), the word "teabag" may be produced. As noticed, the word

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"teabag" is produced by speech and key presses without having its entire speech model/phoneme-set in the memory. In fact the speech model/phoneme-set of the word "teabag" was produced by two other sub-speech models/phoneme-sets (e.g. "tē" and "bag") available in the memory, each representing part of said speech model/phoneme-set of the entire word "teabag" and together producing said entire speech model/phoneme-set. The speech models/phoneme-sets of "tē" or "bag" may be used as part of the speech-models/phoneme-sets of other words such as "teaming" or "Baggage", respectively.

Although in this embodiment, the recognition accuracy is very high, it may happen that sometimes the final selection is an erroneous word which does not exist in the dictionary data base. For this reason, according to one embodiment of the invention, before inputting/outputting said word, the system may compare the final selection with the words of a dictionary of the word of the desired language. If said selection does not match a word in said dictionary, it may be rejected.

Also, according to one method, while pressing the corresponding keys of a portion of a word and speaking it, the user may speak in a manner that his speech covers said corresponding key presses during said entry. This will have the advantage that the user's speech at every moment corresponds to the key being presses simultaneously, permitting easier recognition of said speech. On the other hand, at the end of the entry of a word, a user may press any key without speaking. This may inform the system that the word is entirely entered (e.g. pressing a key and not speaking may be assigned to characters such as punctuation marks, PC functions, etc). This matter has already been explained in the PCT applications that have already been filed by this inventor).

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After completion of the recognition procedures described above, if the selected output comprises more than one word, according to one embodiment, said words may be presented to the user (e.g. in a list printed at the display) and the user may select one of them by for example pressing a "select" key.

It must be noted that in some cases, recognizing part of the phonemes of one or more sub-speeches of a word (preferably, those at the beginning of said sub speeches), may be enough for recognition of the corresponding word in the press and speak data entry system of the invention.

According to one embodiment of the invention instead of considering all of the phonemes corresponding to a sub-speech of a word, only a few phonemes, (preferably those at the beginning of said sub-speech) may be considered and, preferably, assigned to the key(s) corresponding to the first letter of the character set(s) corresponding to said phoneme set. Said phoneme set may be used for the recognition purposes by the press and speech data entry system of the invention. According to this method, the number of the speech-models/phoneme-sets necessary for recognition of many entire words may dramatically be reduced. In this case, to each key of a keyboard such as a keypad, only few phoneme sets will be assigned permitting easier recognition of said phoneme sets by the voice/speech recognition system.

By using a speech recognition system for evaluation of all/few (preferably the beginning) characters of each sub-speech (preferably, the first sub-speech) of a word along with consideration of all of the key presses corresponding to all of the characters of said word, a word in a language may be recognized by the data entry system of the invention.

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As mentioned before, different sets of phonemes (or speech models) according to sub-speeches of the words in a language may be considered and, preferably, memorized. Each of said sets of phonemes may correspond to a portion of a word at any location within said word. Each of said sets of phonemes may correspond to one or more sets (e.g. chain) of characters having similar/substantially-similar pronunciation. Said phoneme-sets may be assigned to the keys according to the first character of their corresponding character-sets. For example, the phoneme-set "tē", representing the character-sets "tee" and "tea", may be assigned to the key 3301 also representing the letter "t". If a phoneme-set represents two chains of characters each beginning with a different letter, then said phoneme-set may be assigned to two different keys each representing the first letter of one of said chain of characters. For example, for enhancing the accuracy of the voice recognition system of the invention, to the phoneme-set "and", character-sets "and" and "hand" having substantially similar pronunciations may be assigned. In this case, said phoneme-set may be assigned to two different keys, 3302, and 3303 representing the letters "a" and "h", respectively. It is understood that when pressing the key 3302 and saying "hand", the corresponding character-set, preferably, will be "and", and when pressing the key 3303 and saying "hand", the corresponding character-set, preferably, will be "hand".

Fig. 37 shows an exemplary table showing some of the phoneme sets that may occur at the beginning (or anywhere else) of a syllable of a word starting with the letter "t". The last row of the table also shows an additional example of a phoneme set and a relating character set for the letter "i".

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Although phoneme sets having more phonemes (e.g. longer phoneme-sets such as, taps, tāke, tāst, etc.) may be considered, modeled, and memorized to help recognition of a word, in this embodiment wherein the user presses substantially all of the keys corresponding to the letters of a word, evaluating/recognizing few beginning characters of one or more portions (e.g. syllables) of said word by combining the voice/speech recognition and also using dictionary of words database and relating databases (such as key presses values) as shown in fig. 35, may be enough for producing said word. Obviously, when needed, longer phoneme sets may also be used for better recognition and disambiguity.

As an example, by considering fig. 33 and also using the table of the fig. 37, to produce the word "title", a user may press the key 3301 corresponding to the letter "t" and say 'tī" and then press the remaining key presses corresponding to remaining letters "itle". At the end of the word the user may presse for example, an end-of-the-word key such as a space key. As shown in said table, to the phoneme set "tī", character sets such as "ti, ty, tie" are assigned. The first letter "t" is obviously, selected. Second letter will be "i", because of pressing the key 3303 (e.g. "y" is on the key 3304). The next key pressed is the key 3301 relating to the letter "t". In this case the character set "tie" possibility is rejected. So "ti" will be definitively selected. The system now considers "ti" along with the remaining key presses (values) 8 (e.g. "t, u, v"), 5 (e.g. "g, h, i"), and 3 (e.g. "d, e, f"). Comparing these input with a dictionary of words having corresponding key presses data base may reveal that the only word corresponding to these input is the word "title". The system then selects the word "title".

For better recognition, the user may speak more than one sub-speech of a word while pressing the corresponding keys. In this case, the system may consider said input by speech to better recognize the characters corresponding to said more than one sub-speech of said word.

By typing a word (having one or more portions/syllables) through a keyboard/keypad and speaking said word partially/entirely, in almost every case, recognition of few beginning characters of at least one of said portions/syllables (preferably, the first portion/syllable) of said word by the speech recognition system (helped by the evaluation of the corresponding key presses), combined with the evaluation of the key presses corresponding to the rest of the characters of said word, will produce said word.

In another example, to enter the word "taken" which comprises two sub-speeches/syllables, "tā" and "ken", when typing the first character "t" (key 3301), the user says "tā" and then presses the rest of the keys (e.g. "a") corresponding to the rest of the characters of the first syllable. The user then naturally proceeds to the next syllable and says "ken" while pressing the key 3305 corresponding to letter "k" and continues to press the remaining keys of said next syllable corresponding to the letters "en". He then may press, for example, a space key to inform the system of the end of data entry.

After completion of the recognition procedures described above, if the selected output comprises more than one word, said words may be presented to the user (e.g. in a list printed at the display) and the user may select one of them by for example pressing a "select" key.

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Shortcut: Less Key Presses Combined With at least Part of the Phonemes

Small mobile electronic devices having keypads with limited number of keys are commonly used worldwide. Users press the keys of said keypads by using the fingers (e.g. thumb, forefinger) of one hand. Even in a the above-mentioned data entry systems wherein each symbol is entered by a single pressing action on a corresponding key, the speed of data entry is slower than the speed of the data entry using a PC keyboard wherein the users usually use the fingers of both hands to press the keys of the keyboard.

To enhance the data entry system of the invention and to permit quicker data (e.g. text) entry, a macro-level data/text entry system have been proposed in the PCT application PCT/US00/29647. In said PCT application, there was mentioned that macros (e.g. a chain of letters/characters) can be assigned to a key of a keypad and inputted by a single pressing action combined with/without voice/speech. By assigning at least part of the characters of a word to a single key press an entire word may be inputted by few key presses. By applying this method within the press and speak data entry methods of the invention, a quick data entry for mobile environment/small devices may be provided. In this method, the number of key presses are usually less than the number of the characters of a word (except for the single characters and some words such as out-of-dictionary-words, which may require character by character entry).

As mentioned before, phoneme-sets corresponding to at least a portion of the speech (including one or more syllables) of words of one or more languages may be assigned to different predefined keys of a keypad. Also, as mentioned

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before, each of said phoneme-sets may represent at least one character-set in a language. As mentioned before, a phoneme-set representing a chain of character such as letters (e.g. a character-set), may preferably be assigned to the same key that another phoneme representing the first character of said chain of characters is assigned.

According to a preferred embodiment of the invention, a user may press the key(s) corresponding to, preferably, the first letter of a portion of a word while, preferably simultaneously, speaking said corresponding portion. For this purpose a user may divide a word to different portions (e.g. according to, for example, the syllables of the speech of said word). Speaking each portion/syllable of a word is called "sub-speech", in this application. It is understood that the phoneme-sets (and their corresponding character-sets) corresponding to said divided portions of said word must be available within the system.

According to this embodiment, for example, to enter the word "tiptop" which may be divided in two sub-speeches (e.g. in this example, according to its syllables) "tip" and "top", the user may first press the key 3301 (e.g. phoneme/letter "t" is assigned to said key) and (preferably, simultaneously) say "tip" (e.g. the first sub-speech of the word "tiptop"), then he may press the key 3301 and (preferably, simultaneously) say "top" (e.g. the second sub-speech of the word "tiptop"). Using the exemplary table in the fig. 37, set of characters "tip" is assigned to the set of phonemes "tip" and to the letter "t" on the key 3301. When the user presses the key 3301 and says 'tip", the system compares the speech of the user with all of the phoneme sets/speech_models which are assigned to the key 3301. After selecting one (or more) of said phoneme sets/models which best match said user's speech, the

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system selects the character sets which are assigned to said selected set(s) of phonemes. In the current example, only one character set (e.g. tip) was assigned to the phoneme set "tip". The system then proceeds in the same manner to the next portion (e.g. sub-speech) of the word, and so on. In this example, the character set "top" was the only character set which was assigned to the phoneme set "top". The system selects said character set. According to one embodiment of the invention, after selecting all of the character sets corresponding to all of the sub-speeches/phoneme-sets of the word, the system then may assemble said character sets (e.g. an example of assembly procedure is described in the next paragraph) providing different groups/chains of characters. The system then may compares each of said group of characters with the words (e.g. character sets) of a dictionary of words data base available in the memory. For example, after selecting one of the words of the dictionary which best matches to one of said groups of characters, the system may select said word as the final selection. In this example, after entering the second portion/syllable, the user presses for example, a space key, or another key without speaking to inform the system that the word wad entirely entered (e.g. pressing a key and not speaking may be assigned to characters such as punctuation marks, PC functions, etc). This matter has already been explained in the PCT applications that have already been filed by this inventor.). The system assembles the character sets 'tip' and "top' and produces a group of characters 'tiptop". If desired, the system then compares said group of characters with the words available in a dictionary of words data base of the system (e.g. an English dictionary) and if one of said words matches said group of characters the system inputs/outputs said

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word. In this example, the word "tiptop' exists in an English dictionary of the system. Said word is finally inputted/outputted.

Fig. 38 shows a method of assembly of selected character sets of the embodiments. For example, when a user tried to enter the word "envelope" in three sequences by using an embodiment of the invention, the system selected one to two character sets 3801 for each portion. As shown in fig. 39, the system then may assemble said character sets according to their respective position within said word, providing different group of characters 3802. Said group of characters 3802 will be compared with the words of the dictionary of words of the system and the group(s) of characters which match(es) one or more of said words will be finally selected and inputted. In this example, the character set 3803 (e.g. envelope"), is the only character set which matches a word in said dictionary. Said word is finally selected.

As mentioned, in some cases, the speech recognition system may select more than one phoneme set/speech model for the speech of all/part (e.g. a syllable) of a word. For example, if a user having a "bad" accent tries to enter the word "teabag" according the current embodiment of the invention, he first presses the key 3301 and simultaneously says "tē". The system may not be sure whether the user said "tē", or "thē", both assigned to said key. In this case the system may select different character sets corresponding to both phoneme sets. By using the same procedure, the user then enters the second portion of the word. In this example, only one character set, "bag", was selected by the system. The user finally, presses a space key. The system, then may assemble (in different arrangements) said character sets to produce different group of characters and

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compare each of said group of characters with the words of a dictionary of words data base. In this example the possible group of characters may be:

- "teebag"
- "teabag"
- "thebag"

The only group of characters that matches a word in a dictionary of words in for example, English language, is the word "teabag". This word may be considered as the final selection.

As just demonstrated, it may happen that the system selects more than one character set for each/some phoneme sets of a word. In this case, more than one group of characters may be assembled. Therefore, probably, more than one word of the dictionary may match said assembled groups of characters. In this case, said words may be presented to the user (e.g. in a list printed at the display) and the user may select one of them by for example pressing a "select" key. Also, if the system comprises enough memory and processing speed, a speech recognition system may be used to select one of said selected word according to, for example, the corresponding phrase context.

If a word/portion-of-a-word comprises many phonemes but its speech comprises a single syllable, according to one method, a phoneme-set/model comprising/considering all of said phonemes of said word/portion-of-a-word may be assigned to said word. For example, to enter the word "thirst", a phoneme set constituting of all of the phonemes of said world may be assigned to said word and to the (key of) letter "t" (e.g. positioned-on/assigned-to the key 3301). For example, the user presses the key 3301 and says "thirst". As explained before, the system selects the character set(s) (in this example, only one, "thirst") of sub-

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speech(es) (in this example, one sub-speech) of the word, and assembles them (in this example, no assembly). The system, then, may compare said characters set with the words of the dictionary of the word of the system and if said character set matches one of said words in the dictionary, then it selects said word as the final selection. In this case, the word "thirst" will be finally selected.

In some cases, specially when words are comprised of only one syllable, more than one key press for a syllable may be necessary for disambiguation of a word. For this purpose, different user-friendly methods may be implemented. For example, the word "fire", which originally comprises one syllable may be pronounced in two syllables comprising phoneme sets, "fī", and "re", respectively. The user in this case may first press the key corresponding to the letter "f" while saying "fī". He then, may press the key corresponding to the letter "r", and may say "re".

Also, for example, the word "times", may be pronounced in two syllables, "tī" and "mes", or "tīm" and "es". Also a word such as "listen", may be pronounced in two syllables, "lis", and "ten" which may require the key presses corresponding to letters "l' and "t", respectively. Also according to this principle, the word "thirst", may be divided in three portions, "thir", "s", and "t". For example, by considering that the phoneme set "thir" may already been assigned to the key comprising the letter "t" (e.g. key 3301), the user may press the key 3301, and say "thir', then he may press the key 3306 corresponding to the letter "s" and pronounce the sound of the phoneme "s" or speak said letter. He then, may press the key 3301 corresponding to the letter 't" and pronounce the sound of the

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phoneme "t' or speak said letter. At the end of the word, the user may press an end-of the-word key such as a space key 3307.

Also for better disambiguation and also for reducing the number of phoneme-sets necessary for words having for example, the same speech at their beginning (e.g. "bring" and "brings"), in addition to pressing the first key of a syllable, and speaking said syllable, in some cases one or more character such as the last character(s) (e.g. "s", in this example) of a word/syllable may be pressed and spoken. For example, a user may press a key corresponding to the character "b" and say "bring" (e.g. phoneme-set "bring" was assigned to the key "3302). He then, may press the key corresponding to the letter "s", and either pronounces "s" or speaks the sound of the phoneme "s'. After providing an end-of-the-word signal such as pressing the "space" key, the system will considers the two data input sequences, and provides the corresponding word "brings" (e.g. its phoneme set was not assigned to the key 3302). It is understood that entering one or more single character(s) by using the method here, may be possible in any position (such as in the beginning, in the middle, or at the end) within a word. For not confusing the system, when a user enters a portion (of a word) comprising a letter, by the word/part-of-a-word entry system of the invention, he preferably may speak the sound of said letter. For example, instead of saying "em", the user may pronounce the sound of the phoneme "m". Also in a similar case, speaking saying "t", may be related by the system to the chain of characters "tea', "tea" and the letter "t", while pronouncing the sound of the phoneme "t', may be related to only the letter "t".

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As described before, for better disambiguation, a word/portion-of-a-word/syllable-of-a-word/sub-speech-of-a-word (such as "thirst" or "brings") having substantial number of phoneme sets may be divided into more than one portion wherein some of said portions may contain one phoneme/character only, and entered according to the data entry system of the invention. Also as mentioned, according to this approach, multiple phoneme-sets wherein each comprising fewer number of phonemes may replace a single phoneme-set comprising substantial number of phonemes, for representing a portion of a word (e.g. a syllable). Also as described before, dividing the speech of a long portion (e.g. long syllable comprising substantial number of phonemes) of a word into shorter sub-speech/phoneme-set portions, will reduce the total number of phoneme-sets necessary for recognition of all of the words available in a dictionary data base. As also described before, this will permit to assign less phoneme-sets to each key of the keyboard/keypad.

According to one embodiment of the invention, based on the above-mentioned principles, to each key of a keyboard/keypad, short phoneme-sets comprising few phonemes may be assigned. For this purpose, for example, if a phoneme-set starts with a consonant it may comprise following structures/phonemes:

- only said consonant
- said consonant at the beginning, and at least one vowel after that
- said consonant at the beginning, at least one vowel after said consonant, and one consonant after said vowel(s)

If the phoneme-set starts with a vowel, it may have the following structures:

- at least one vowel at the beginning
- said vowel(s) at the beginning, and one consonant after that

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Fig. 40 shows some examples of the phoneme-sets 4001 for the constant "t" 4002 and the vowel "u' 4003, according to this embodiment of the invention. Columns 4004, 4005, 4006, show the different portions of said phoneme-sets according to the sound groups (e.g. consonant/vowel) constituting said phoneme-set. Column 4007 shows corresponding exemplary words wherein the corresponding phoneme-sets constitute part of the speech of said words. For example, phoneme set "tār" 4008 constitutes portion 4009 of the word "stair". Column 4010 shows an estimation exemplary of the number of key presses for entering the corresponding words (one key press corresponding to the first character of each portion of the word according to this embodiment of the invention). For example, to enter the word 'until" 4011, a user will first press the key 3301 (see fig. 33) corresponding to the letter "u" and preferably simultaneously, says "un". He then presses again the key 3301 corresponding to the letter "t", and also preferably simultaneously, says "til". To end the word, the user then informs the system by an end-of-the-word signal such as pressing a space key. The word until was entered by two key presses (excluding the end-of-the-word signal) along with the user's speech. According to the current embodiment based on the principles described before, a consonant phoneme which has not a vowel, immediately, before or after it, may be considered as a separate portion of the speech of a word. For example, the "s" at the beginning of the word "study" 4012, and the "s" in the middle of the word "understood" 4013 may follow this rule. This will extremely reduce the number of phoneme-sets necessary for entering most of the words available in a dictionary (e.g maybe around one hundred phoneme-sets per the beginning phoneme/character of a portion of a word may be enough for recognition of most of the words in for example, the English language,

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when using a telephone-type keypad). Fig. 40 shows as example, other beginning phonemes/characters such as "v" 4014, and "th" 4015 assigned to the key 3301 of a telephone-type keypad. For each of said beginning phonemes/characters, phoneme-sets according to the above-mentioned principles may be considered.

It is understood that if needed/desired longer sub-speech portions of a word, having more phonemes may also be considered with the short phoneme-sets of the system. Also for examples, phoneme sets representing more than one syllable of a word may also be considered and assigned, to a corresponding key as described. Also for easier recognition, as described in previous embodiments, to permit better recognition of the speech pronounced by the users that, in many cases, may be natives of non English spoken regions, character-sets corresponding to phoneme sets (such as "tō" and "tô") having ambiguously similar pronunciation, may be assigned to all of said phoneme-sets.

Same predefined (preferably, short) phoneme-sets/speech-models may permit the recognition and entry of words in many languages. For example, the phoneme set "sha", may be used for recognition of words such as:

"shadow", in English,
"chaleur", in French,
"shalom', in Hebrew,
"shabab", in Arabic,
"Geisha", in Japanese, Etc.

To each of said phoneme sets, corresponding character-sets in a corresponding language may be assigned. As mentioned before, by doing so, a powerful multi-lingual data entry system based on phoneme-set recognition may be provided. For this purpose one or more data bases in different languages may

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be available within the system. Different methods to enter different text in different languages may be considered.

According to one method, by having a common phoneme-sets data base and the corresponding character-sets database in many languages, for entering text in a desired language, a user may select a language mode by informing the system by a predefined means. For example, said user may press a mode key to enter into a desired language mode. In this case after entering a word by entering the portions of a said word according to a corresponding embodiment of the invention, the system will compare the selected corresponding groups/chains of assembled character-sets with the words of a dictionary of words corresponding to said selected desired language. After matching said group of characters with one or more words of said dictionary, the system selects said matched word(s) as the final selection to be inputted/outputted. If the selection contains one word, said word may become the final selection. If the selection comprises more than one word, then said words may be presented to the user (e.g. in a list printed at the display) and the user may select one of them by for example using a "select" key.

According to another method, all data bases in different languages available with the system will be used simultaneously, permitting to enter an arbitrary word entry in different languages (e.g. in a same document). For example, after entering a word by entering the portions of a said word according to one embodiment of the invention, the system may compare the selected corresponding groups of characters with the words of a all of the dictionaries of words available with the system. After matching said group of characters with the words available in different dictionaries available with the system, the system

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selects said matched word(s) as the final selection to be inputted/outputted. If the selection contains one word, said word may become the final selection. If the selection comprises more than one word, then said words may be presented to the user (e.g. in a list printed at the display) and the user may select one of them by for example using a "select" key.

In some languages such as Hebrew or Arabic, wherein most of the vowels are not presented by separate characters, the system may even work with higher accuracy.

Non comparison with the dictionary of words

The system may also work without the step of comparison of the assembled selected character-sets with a dictionary of word. This is useful for entering text in different languages without worrying about their existence in the dictionary of the words of the system. For example, if the system does not comprise a Hebrew dictionary of words, a user may enter a text in Hebrew language by using the roman letters. To enter the word "Shalom", the user will use the existing phoneme sets "sha" and "lom" and their corresponding character sets available within the system. A means such as a mode key may be used to inform the system that the assembled group of characters will be inputted/outputted or presented to the user for confimation without said comparison with a dictionary database. If more than on assembled group of characters has been produced, they will be may be presented to the user (e.g. in a list printed at the display) and the user may select one of them by for example pressing a "select" key.

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In the word/part-of-a-word entry embodiments of the invention, if the inputted/outputted word is not the one desired by the user, a word-erasing function may be assigned to a key. Similar to a character erasing function (e.g. delete, backspace) keys, pressing a word-erase-key will erase, for example, the word before the cursor on the display.

According to another embodiment of the invention, most phoneme-sets of the system may preferably, have only one consonant. Fig. 41 shows some of them as example. According to this embodiment, for example, to enter the word "teabag" 4101, the user first presses the key 3301 while saying "tē". He then presses the key 3302 while saying "ba". He finally presses the key 3303 while saying "g" (or pronouncing the sound of the phoneme "g"). As in other embodiments, at the end of the word he may press a key such as space key.

For better response and to augment the accuracy of the system, an auto-correction software may be combined with the embodiments of the invention. Auto correction software are known by the people skilled in the art. For example, (by considering the keypad of fig. 33) when a user tries to enter the word "network", he first presses the key 3308 of the keypad to which the letter "n" is assigned and simultaneously says "net". To the same key 3308 the letter "m" is also assigned. In some situations, the system may misrecognize the user's speech as "met" and select a character set such as "met" for said speech. The user proceeds to entering the next syllable by pressing the key 3304 corresponding to the first letter, "w", of said syllable and says "work". The system recognizes the phoneme set "work" pronounced by the user and selects a corresponding character set "work". Now the system assembles the two selected character sets and gets the word "metwork". By

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comparing this word with the words existing in the dictionary of the words database of the system, the system may not match said assembled word with any of said words of said database. The system then will try to match said assembled word with the most resembling word. In this case, according to one hypothesis the system may replace the letter "m" by the letter "n", providing the word "network", which is available in said dictionary. According to another hypothesis, by considering that "m", and "n" may be misrecognized by the voice recognition system and both are located on a same key, the system may replace the phoneme set "met' by the "phoneme set "net' and select the character set "net' assigned to the phoneme set "net". Then, by replacing the character set "met" by the character set "net', the word 'network" will be assembled. Said word is available in the dictionary of the words of the system. It will finally be selected.

In another example, entering "that" may be recognized as "vat" by the system. Same procedure will disambiguate said word and will provide the correct word, "that".

In another example, if the system does not match an assembled group of characters with a word of the dictionary, the auto-correction software of the system may evaluate the position of the characters of said assembled character-set (relating to each other) in a corresponding portion (e.g. syllable) and /or within said assembled group of characters, and tries to match said group of characters to a word of the dictionary. For example, if a character is missing within said chain/group of characters, by said comparison with the words of the dictionary, the system may recognize the error and output/input the correct word. For example, if a user entering the word "un-der-s-tand" (e.g. in 4 portions), forgets to enter the

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portion "s" of said word, one of the assembled group of characters may be the chain of characters "undertand". By considering the characters of said chain of characters and their position relating to each other in said chain, and comparing said chain of characters with the words of the dictionary, the system may recognize that the intended word is the word "understand" and eventually either will input/output said word or may present it to the user for user's decision. The auto-correction software of the system may, additionally, include part of, or all of the functionalities of other auto-correction software known by the people skilled in the art.

Words such as "to', "too", or "two", having the same pronunciation (e.g. and assigned to a same key), may follow special treatments. For example, the most commonly used word among these words is the word "to". This word may be entered according to the embodiments of the invention. The output for this operation may be the word "to" by default. The word "too', may be entered (in two portions "to" and "o") by pressing the key corresponding to the letter "t", while saying "tōō". Before pressing the end-of-the-word key, the user may also enter an additional character "o", by pressing the key corresponding to the letter "o", and saying "o". Now he may press the endpoint key. The word "too" will be recognized and inputted. To enter the word "two", the system may either enter it character by character, or assign a special speech such as "tro" to said word and enter it using this embodiment. Also for example, to enter "two", the user may press the key 3301 and pronounce a long "tōō ". To enter the digit "2", the user presses the corresponding key 3302, and pronounces said digit. It is understood that examples shown here are demonstrated as samples. other methods of entry of the words having substantially similar pronunciations may be considered by the people skilled in the art.

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A very interesting issue has just been mentioned. For example, by saying "fīv" and pressing the key 3309 corresponding to the first letter of the word "five", the word "five" will be entered. Interestingly, by saying "fīv" and pressing the key 3305 corresponding to the digit "5", the digit "five" will be entered. By saying a word corresponding to two different symbols, and using key presses, the user intention is clarified. This is one of the shortcomings of the data entry by the speech alone wherein the user intention may not be considered by the voice/speech recognition system. Also for example, to a same digit, more than one speeches may be assigned. For example, to the digit "4", two speeches, "four", and "forty", may be assigned. A user may produce the number "45", by either saying "four", "five" while pressing the corresponding keys, or he may say "forty five" while pressing the same keys. Also when a user presses the key 3306 and says "seven", the digit "7" will be inputted. This is because to enter the word "seven", the user may press the key 3306, and say "se". He then may press the key 3301 and say 'ven".

In other languages such as French, wherein the speech of the digit "7", comprises one syllable, for disambiguation purpose, a custom made speech having two syllables may be assigned to the character set "sept". For example, the word "septo" may be created by a user and added to the dictionary of the words. This word may be pointed to the word "sept" in the dictionary. When a user enters the word "septo" (according to the current embodiment of the invention) the system will find said word in the dictionary of the words of the system. Instead of inputting/outputting said word, the system will input/output the word pointed by

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the word "septo". Said word is the word "sept". The created symbols pointing to the words of the dictionary data base may be arranged in a separate database.

According to another method, a digit may be assigned to a first mode of interaction with a key, and a character-set representing said digit may be assigned to another mode of interaction with said key. For example, the digit "7" may be assigned to a single pressing action on the key 3306 (e.g. while speaking it), and the chain of characters "sept" may be assigned to a double pressing action on the same key 3306 (e.g. while speaking it).

It must be noted that the sub-speech-level data entry system of the invention is based on the recognition of the speech of at least part of a word (e.g. sub speech of a word). Considering that many words in one or more languages may have common sub-speeches, by slightly modifying/adding phoneme sets and assign the corresponding characters to said phoneme sets, a multi-lingual data entry system may become available. For example, many languages such as English, German, Arabic, Hebrew, and even Chinese languages, may comprise words having portions/syllables with similar pronunciation.

It is understood that a user may add new standard or custom-made words and corresponding speech to the dictionary database of the system. Accordingly, the system may produce corresponding key press values and speech models and add to corresponding databases.

As mentioned before, to enter a word, a user may press a key corresponding to the first character/letter of a first portion of a word and speak (the phonemes of) said portions. If said word is spoken in more than one portions, the user may repeat this procedure for each of the remaining portions of said word.

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According to one embodiment of the invention, when the user presses a key corresponding to the first letter of a portion (such as a syllable) of a word and speaks said portion, the voice/speech recognition system hears said user's speech and tries to match at least part (preferably, at least the beginning part) of said speech to the phoneme sets assigned to said key. The best matched phoneme sets are selected and the corresponding character sets may be selected by the system. After entering the entire word by repeating the same procedure for each portion (e.g. syllable) of said word, one or more character sets for each portion (e.g. syllable) of said word may be selected, respectively. The system now, may have one or more character sets for each portion (e.g. syllable) of a word wherein each character set may comprise at least part of the (preferably, the beginning) characters of said syllables. The system then, will try to match each of said characters sets to the (e.g. beginning) characters of the corresponding syllables of the words of a dictionary of the words data base of the system. The best matched word(s) will be selected. In many cases only one word of the dictionary will be selected. Said word will be inputted/outputted. If more than one word available is selected, said words may be presented to the user (e.g. in a list printed at the display) and the user may select one of them by for example pressing a "select" key.

For example, by using the table of the fig. 37, and the keypad of the fig. 33, to enter the word "trying" (e.g. phonemes-sets "trī-ing), the user may first press the key 3301 and say "trī". The system matches the user's speech to the corresponding phoneme set assigned to the key 3301 and selects the corresponding character sets (e.g. in this example, "try", "tri"). The user then presses the key 3303

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corresponding to the character "i" and says "ing". In this case, the system matches the beginning of the user's speech to the phoneme set "in" assigned to the key 3303 (e.g. phoneme set "ing" does not exist in the exemplary data base, therefore it is not assigned to said key) and selects the corresponding character set "in". The user now has finished to enter the word and he enters an endpoint (e.g. end of the word) symbol such as pressing a space key or pressing any key without speaking (e.g. pressing a key and not speaking may be assigned to characters such as punctuation marks, PC functions, etc. This matter has already been explained in the PCT applications that have already been filed by this inventor). The system now may create different groups of characters each comprising possible characters of at least part of the beginning characters of each portion/syllable of the desired word. In this example, two group of characters may be created. Said groups of characters are:

"tri - in "

and;

"try - in "

Only the second group of characters (e.g. "try in") corresponds to an existing word in the English dictionary wherein said word comprises the letters "try" at the beginning of its first syllable, and also comprises the letters "in" at the beginning of another (e.g. second) syllable of said word. Said word is the word "trying".

In this system the quantity of phoneme sets/speech models necessary for recognition of many entire words may dramatically be reduced. On the other hand the number of the sets of character representing said phoneme sets may be augmented but will not have a significant impact on the amount of memory needed.

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In many cases only one of said assembled characters may match a word in the dictionary. Said word will be inputted/outputted. If more than one assembly of character sets correspond to words available in the dictionary, said words may be presented to the user (e.g. in a list printed at the display) and the user may select one of them by for example pressing a "select" key.

As mentioned before, the system may select a word according to one or more of said selected character/phoneme sets corresponding to speech/sub-speech of said word.

In some cases, the system may not consider one or more of said selected character/phoneme sets, considering that they were erroneously selected by the system. Also, according to the needs, the system may consider only part of (preferably, beginning) the phonemes/characters of a phoneme-set/character-set selected by the system. For example, if the user attempts to enter the word "demonstrating", in four portions "de-mons-tra-ting", and the system erroneously selects the character sets, "des-month-tra-ting", according to one recognition method (e.g. comparison of said character-sets with the words of the dictionary), the system may not find a word corresponding to assembly of said sets of characters. The system then, may notice that by considering the letters "de" (e.g. few begging letters) of the first selected character-set and the letters "mon" (few begging letters) of the second character-set, also considering the third and forth character sets, the intended word may be the word "demonstrating". Also as needed, the system may add characters to an assembled (of the selected character sets) chain of characters or delete characters from said chain of characters to match it to a best matching word of the dictionary. For example, if the user attempts to

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enter the word "sit-ting", in two portions, and the system erroneously selects the character sets, "si-ting", according to a recognition method (e.g. comparison of said character/phoneme sets with the words of the dictionary), the system may decide that a letter "t" must be added after the letter "i", within said chain of characters to match it to the word "sitting". In another example, if the user attempts to enter the word "mee-ting", in two portions, and the system erroneously selects the character sets, "meet-ting", according to a recognition method (e.g. comparison of said character/phoneme sets with the words of the dictionary), the system may decide that a letter "t" must be deleted after the letter "e", in said chain of characters to match it to the word "meeting".

Having a same phoneme at the end of a portion of a word (e.g. said word having more than one portion/syllable) and at the beginning of the following portion of said word may permit better recognition accuracy by the system.

According to one embodiment of the invention, for example, to phoneme-sets (assigned to a key) terminating with a phoneme such as a vowel, additional phoneme-sets comprising said phoneme-set and an additional phoneme such as a consonant at its end, may be considered and assigned to said key. This may augment the recognition accuracy. For example, by referring to Fig. 33, when entering the word "coming" comprising two portions "co-ming", the user may press the keys 3302 and say "co", then he may immediately press the key 3308 and say "ming". Because the first portion of the sub-speech is too short, if the phoneme-set "com" is not assigned to the same key 3302 wherein the phoneme-set "co" is assigned, while pressing said key and saying "co", it may happen that the system may misrecognize the speech of said portion by the user and select an

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erroneous phoneme-set such as "côl" (e.g. to which the character-set "call" is assigned). On the other hand if the phoneme-set 'com" is also assigned to said key, the beginning phoneme "m" of the portion "ming" would be similar to the ending phoneme "m" of the phoneme-set "com". In this case the system may select two phoneme-sets "com-ming" and their corresponding character-sets, (e.g. "com/come", and "ming" as example). After comparing the assembled character-sets with the words of the dictionary, the system may decide to eliminate one "m" in one of said assembled character-set and match said assembled character-set it to the word "coming" of the dictionary database.

To permit better recognition of the speech pronounced by the users that, in many cases, may be natives of non English spoken regions, character sets correspondingly assigned to phoneme sets (such as "vo" and "tho") having ambiguously substantially similar pronunciation, may be assigned to all of said phoneme sets. For example, to each of the phoneme sets "vo" and "tho", same (e.g. common) character-sets "tho", "vo", and "vau", etc., may be assigned, wherein in case of selection of said character-sets by the system and creation of different groups of characters accordingly, the comparison of said groups with the words of the dictionary database of the system may result in selection of a desired word of said dictionary.

Entering data such as text through a small keypad severely reduces the data entry speed. The data entry systems of the invention based on pressing a single key for each portion/syllable of a word, while speaking said portion/syllable dramatically augments the data entry speed. The system has also many other advantages. One advantage of the system is that it may recognize (with high accuracy) a word by pressing maybe a single

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key per each portion (e.g. syllable) of said word. Another great advantage of the system is that the users do not have to worry about misspelling/mistyping a word (e.g. by typing the first letter of each portion) which, particularly, in word predictive data entry systems result in misrecognition/non-recognition of an entire word. Also another great advantage of the system is that when a user presses the key corresponding to the first letter of a portion of a word, he speaks (said portion) during said key press. At the end of a word, the user may enter a default symbol such as a punctuation mark (assigned to a key) by pressing said key without speaking. As mentioned before, this key press may also be used as the end-of-the-word signal. For example, a user may enter the word "hi", by pressing the key 3303 and simultaneously say "hī". He then may press the key 3306 without speaking. This will inform that the entry of the word is ended and the symbol "," must be added at the end of said word. The final input/output will be the character set "hi,".

The data entry system described in this invention is a derivation of the data entry systems described in the PCTs and US patent applications filed by this inventor. The combinations of a character by character data entry system providing a full PC keyboard function as described in the previous applications and a word/portion-of-a-word level data entry system as described in said PCT application and here in this application will provide a complete fast, easy and natural data entry in mobile (and even in fix) environments permitting quick data entry through keyboards having reduced number of keys (e.g. keypads) of small electronic devices.

As mentioned before, the data entry system of the invention may use any keyboard such as a PC keyboard. Also as mentioned, according to the data entry

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system of the invention, a symbol on a key of a keyboard may be entered by pressing said key without speaking. The data entry system of the invention may optimally function with a keyboard such as a standard PC keyboard wherein a single symbol is assigned to a predefined pressing action on one or more keys. As is known by people using computer keyboards such as the one shown in Fig. 42, for example, by pressing a key 4201 of a PC keyboard 4200, the letter "b" may be entered. Also for example, by pressing, simultaneously, the shift key 4202 and the key 4203, the symbol "#" may be entered.

By combining the data entry system of the invention with such a keyboard, on one hand a user may use said keyboard as usual by pressing the keys corresponding the desired data without speaking said data (this permits to enter single letters, punctuation characters, numbers, commands, etc., without speaking), and on the other hand, said user may enter a desired data (e.g. word/part-of-a-word) by speaking said data and pressing (preferably simultaneously) the corresponding key(s). For example, by using a keyboard such as a PC keyboard, to enter the letter "b", the user may press the key 4201 without speaking. To enter the word/syllable "band", the user may press the key 4201 and (preferably, simultaneously) say "band". Without the necessity of additional manipulation for changing modes, this, on one hand permits the user to work with the keyboard as usual, and on the other hand enables said user to enter a macro such as a word/part-of-the-word by speaking said macro and (preferably, simultaneously) pressing the corresponding one or more key. Also, for example, to enter the word "bible" constituting of two portions (e.g. two syllables) "bi" and "ble", a user (according to the principles of the data entry system of the invention, as described)

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may press the key 4201 and say "bī". He, then, may press the key 4201 and say "bel".

As mentioned before, the combinations of a character by character data entry system providing a full PC keyboard function as described in the previous applications and a word/portion-of-a-word level data entry system as described in said PCT application and here in this application will provide a complete fast, easy and natural data entry system.

Speech of a word may be comprised of one or more sub-speeches also corresponding to single characters. For example, by referring to Fig. 33, when a user presses the key 3302 of the keypad 3300 and says "b", said data entered, may correspond to the letter "b", the word "be", and the word "bee". According to one embodiment, the system may assign the highest priority to the character level data, considering (e.g. in this example, the letter "b") as the first choice to eventually being inputted/presented to the user. If this is not what the user intended to enter, he then may either continue to enter the rest of the word, character by character, or he, for example, may press an end key to finish the entry of said word and then for example, manipulate a select-key to navigate between the other choices (e.g. "be", and "bee", in this example) and select the one he desires.

According to this method, also for example, while entering a word/chain-of-characters starting with a sub-speech corresponding to a single character and also eventually corresponding to the speech of a word/part-of-a-word assigned to said key, said character may be given the highest priority and eventually being printed on the display of a corresponding device, even before the end-of-the-word signal is

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inputted by the user. If the next part-of-the-speech/sub-speech entered, may still correspond/also-correspond to a single letter, this procedure may be repeated. If an end-of-the-word signal such as a space key occurs, said chain of characters may be given the highest priority and may remain on the display. Proceeding to a next task, such as entering the next word, will be considered as confirmation of acceptance of said chain of characters by the user. If the same data entered also corresponds to one or more words matched by the system, said words may also be available/presented to the user. If said printed chain of single characters is not what the user intended to enter, the user may, for example, use a select key to navigate between said words and select the one he desires.

With continuous description of this embodiment of the invention, if one of the data (speech/part-of-the-speech and/or key press) entered during entering a word/part-of-a-word, does not correspond to a single character and at the end-of-the-word signal has been inputted, then said displayed characters may be erased and instead, the word (corresponding to said data) with highest priority may be presented to the user. If the same data entered also corresponds to more words, said words may also be presented to the user, if he desires. In this case, the user may, for example, use a select key to navigate between said words and select the word he desires.

By using a standard telephone keypad and the data entry of the system of the invention, there may be noticed that in English language there are no words with more than one syllable wherein the speech of all of said syllables also correspond to single letters on the corresponding keys.

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There are several one-syllable words which correspond to a character on a corresponding key (e.g. "b, be, bee", or "t, tea, tee"). As mentioned, in those cases, said single letters may be given the highest priority.

According to the above-mentioned principles, for example:

- to enter "b", the user presses the key corresponding to said letter and says "b"
- to enter "bmx", the user presses the corresponding keys while pronouncing the corresponding letters
- to enter "bmx95", the user presses the corresponding keys and pronounces the corresponding characters
- to enter the word "before", the user may either press the corresponding keys while pronouncing the corresponding letters (e.g. character by character data entry), or for example, he first may press the key corresponding to letter "b" and (preferably, simultaneously) says "bē" and then he presses the key corresponding to the letter "f" and says "for". At the end he enters an end-of-the-word signal such as pressing a space key (e.g. word/portion-of-a-word data entry system).
-

The advantage of this method is in that the user may combine character by character data entry of the invention with the word/part-of-the-word data entry system of the invention, without switching between different modes.

The data entry system of the invention is a complete data entry system enabling a user at any moment to either enter arbitrary chain of characters comprising symbols such as letters, numbers, punctuation characters, (PC) commands, or enter words existing in a dictionary database.

According to one embodiment of the invention, the character-sets (corresponding to the speech of a word/part-of-a-word) selected by the system may be presented to the user before the procedure of assembly and comparison with the word of the dictionary database is started. For example, after each entry of a portion of a word, the character-sets corresponding to said entered data may immediately be presented to the user. The advantage of this method is in that

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immediately after entering a portion of a word, the user may verify if said portion of the word was misrecognized by the system. In this case the user may erase said portion and repeat (or if necessary, enter said portion, character by character) said entry until the correct characters corresponding to said portion are entered. Instead of erasing one by one the characters corresponding to an entered portion of a word, a key permitting to erase the entire characters corresponding to said portion may be provided. According to one embodiment of the invention, a same key may be used to erase an entire word and/or a portion of a word. For example, a single press on said key may result the erasing an entered portion of a word (e.g. a cursor situated immediately after said portion by the system/user indicates the system that said portion will be deleted). Obviously, each additional same pressing action may erase an additional portion of a word before said cursor. Also for example, a double press on said key may result in erasing all of the portions entered for said word (e.g. a cursor may be situated immediately after the portions to be deleted to informs the system that all portions of a word situated before said cursor must be deleted).

It may happen that a user desires to enter a chain of characters such as "systemXB5" comprising entire word(s) and single character(s).

According to one embodiment, after each entry of the data corresponding to a portion of said chain of characters or at the end of the entry of said entire chain of characters, the system may recognize that there is no word in the dictionary that corresponds to the selected character-sets corresponding to each portion of the word. In other hand the system may recognize that the assembly of some of consecutive selected character-sets, correspond to a word in the

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dictionary database while the others correspond to single characters. In this case the system will form an output comprising of said characters and words in a single chain of characters. In the example above, the word "systemXB5" may be entered in five portions, "sys-tem-x-b-5".

For example, by using a telephone keypad such as the one shown in fig. 33, the selected character-sets corresponding to the key press and speech of each portion may be as follow:

portion 5	sys	tem	x	b
character-set 5	sis/sys	tem/theme	x	b/be/bee

After assembling and comparing said character-sets with the words of a dictionary, the system may recognize that there is no word in the database matching the assemblies of said selected character-sets. Then the system may recognize that there are on one hand some portions corresponding to a single character, and on the other hands a single character-set or combination of successive other character-sets correspond to the word(s) in said database. The system then inputs/outputs said combination. In this example, the system may recognize that the assembly of a first and a second character-set "sys" and "tem", matches the word "system". The third and fifth character-sets correspond to the letter "x" and the number "5" respectively. The forth portion may correspond either to the letter "b", or to the words "be" and "bee".

The system may present to the user the following choices according their priority:

"systemxb5"

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"systemxbe5"
"systemxbee5"

It is understood that for easing the recognition procedure of chain of characters comprising single characters and an entire word, the user may signal the start/end of said words/characters in said chain by a predefined signal such as pressing a predefined key.

According to one embodiment of the invention, a word being divided into more than one portions for being inputted, may preferably, be divided in a manner that, when possible, the speech of said portions start with a vowel. For example, the word "merchandize" may be divided in portions "merch-and-ize". Also for example, the word "manipulate" may be divided into "man-ip-ul-ate".

Also for better results, the selected character-sets corresponding to a phoneme-set corresponding to the speech of a portion of a word may consider the corresponding phoneme-sets when said character-sets are compared with the words of the dictionary database. For example, in English language, the corresponding character-sets for the phoneme-set "ār" may be character-sets such as "air", "ar", and "are". The corresponding character-sets for the phoneme-set "ăr" may be "are", and "ar". In this example, both phoneme-sets have similar character-sets, "are", and "ar". In case of misrecognition of the input, the system may attempt for a (e.g. reverse) disambiguation or correction procedure. Knowing to which phoneme-set a character-set is related, may help the system to better proceed to said procedure. For example, if the user intends to enter the word "ār", and the system erroneously recognizes said speech as "āb" (e.g. no meaning in this example). Relating character-sets for said erroneously recognized phoneme-set may be character-sets such as "abe", "ab". By

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considering said phoneme-set, the system will be directed towards the words such as "aim", "ail", "air", etc. (e.g. relating to the phoneme "ā"), rather than the words such as "an", "am" (e.g. relating to the phoneme "a").

As mentioned before, phoneme sets representing more than one syllable of a word may also be considered and assigned to a key and entered by an embodiment of the invention (e.g. a phoneme-set corresponding to a portion of a word having two syllables may be entered by speaking it and pressing a key corresponding to the first character of said portion). Also as mentioned before, an entire word may be entered by speaking it and simultaneously pressing a key corresponding to the first phoneme/character of said word. Even a chain of words may be assigned to a key and entered as described. It may happen that the system does not recognize a phoneme-set (e.g. sub-speech), of a word having more than one sub-speech (e.g. syllable). In this case, two or more consecutive sub-speeches (e.g. syllables) of said word may be assigned to a key. Referring to fig. 33, for example, the word "da-ta" (e.g. wherein for example, the system misrecognises the phoneme-set "ta"), may be assigned to the key 3309. To enter said word, the user may press the key 3309 and say "data".

Press and speak data entry system of the invention permits to enter words, therefore an end-of-the-word procedure may automatically or manually being managed by the system or by the user, respectively.

As described before, there are different kinds of words being entered such as the:

- Words being entered in one portion by a single sub-speech/speech (e.g. words having one syllable) combined with the corresponding key press(es)
- Words being divided into more than one portion (e.g. words having more than one syllable, or words having one syllable but comprising multiple

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consecutive consonants or vowels) and being entered by sub-speech/speech corresponding to each portion combined with the corresponding key press(es) for each portion.

According to one embodiment of the invention, when an entire word corresponding to an existing word in a database of the words of a language is entered and the user enters an end-of-the-word signal such as pressing an "End-of-a-Word" key, then said word may be considered as the result of said data entered for being inputted/outputted. According to predefined system design/mode, the system may consider to add or not to add a character such as a space character at the end of said result. If the system or the user, do not enter a symbol such as a space character or an enter-function after said word, the next entered word/character will may be attached to the end of said word.

Example:

"FOR" followed by an "End-of-the-Word" key (no spacing), results "FOR"

According to another embodiment of the invention, when an entire word corresponding to an existing word in a database of the words of a language is entered and the user enters additional symbols such as at least a space character, at least a punctuation mark, or at least an "enter" function at the end of said word, then said word and said additional symbols are entered.

Examples:
"FOR" followed by an " " results "FOR "
"FOR" followed by a "," results "FOR,"
"FOR" followed by an "." results "FOR."

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According to one embodiment of the invention, when a user enters a word corresponding to an existing word in a dictionary database of the words of a language and then said user enters a next word (without entering an end-of-the-word signal such as a space character between said two consecutive words) also corresponding to an existing word in the dictionary, but the assembly of said two words does not correspond to a word in a dictionary of words database, then the system may automatically add a space character between said two words.

Example: "FOR" followed by "SOME" results "FOR SOME"

According to one embodiment of the invention, when a user enters a word corresponding to an existing word in a dictionary database of the words of a language and then said user enters a next word (without entering an end-of-the-word signal such as a space character between said two consecutive words) also corresponding to an existing word in the dictionary, and the assembly of said two words also correspond to a word in a dictionary of words database, then the system may present two choices to the user. A first choice may be the assembly of said two words (without a space character between them), and the second choice will be said two words comprising one (or more) space character between them. According to factors such as predefined system design, meaning of assembled and separate meaning of said words, phrase concept, etc., the system may give a higher priority to one of said choices and may print it on the display of the corresponding device for user confirmation. The user, then, will decide which one to select. For example, proceeding to the entry of the next word/character may inform the user that the first choice was confirmed.

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Example 1:
"FOR" followed by "GIVE" may result a first choice "FORGIVE"
"FOR" followed by "GIVE" may result a second choice "FOR GIVE"

Example 2:
"WORK" followed by "MAN" may result "WORKMAN"
"WORK" followed by "MAN" may also result "WORK MAN"

The above-mentioned procedure may apply to words such as the following word(s) also corresponding to the same principles.

Example:
"WORKMAN" followed by "SHIP" may results "WORKMANSHIP"
"WORKMAN" followed by "SHIP" may also result "WORKMAN SHIP"

According to one embodiment of the invention, when a first word corresponding to an existing word in a database of the words of a language is entered and the user enters a next word/portion-of-a-word to the end of said first word (with no space character between them) and said next word/portion does not corresponds to an existing word in the dictionary, but said next word/portion assembled with said first word corresponds to a word in the dictionary, then the system will automatically attach said first word and said second word/portion to provide a single word.

Example:
"FOR" followed by "CING" results "FORCING"
"FORGIVE" followed by "NESS" results "FORGIVENESS"

According to one embodiment of the invention, when a first entered word/portion-of-a-word does not exist in a database of the words of a language and the user enters a next word/potion-of-a-word, the system will assemble said first and next portions and compares said assembly with the words in a dictionary. If said assembly corresponds to a word in said dictionary, then the system selects said word and eventually presents it to the user for confirmation.

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Example:
"SYS" followed by "TEM" results "SYSTEM"

It is understood, that for better results, also for reducing the ambiguity, automatic end-of-the-word procedure may be combined with user intervention. For example, pressing a predefined key at the end of a portion, may inform the system that said portion must be assembled with at least one portion preceding it. If defined so, the system may also place a space character at the end of said assembled word.

Example 1: without user intervention, the following situation may occur:

"FOR" followed by "GIVE" may result a first choice, "FORGIVE"
"FOR" followed by "GIVE" may result also a second choice, "FOR GIVE"

Example 2: with user intervention, the following situation may occur:

"FOR" followed by "GIVE" followed " " may result one choice, "FORGIVE "

Entering the system into a manual/semi-automatic/automatic end-of-the-word mode/procedure may be optional. A user may inform the system by a means such as a mode button for entering into said procedure or exiting from it. This is because in many cases the user may prefer to manually handle the end-of-the-word issues.

As mentioned in a previous embodiment, the user may desire to, arbitrary, enter one or more words within a chain of characters. This matter has already been described in one of the previous embodiments of the invention.

Example: "91SYSTEMep7"

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According to one embodiment of the invention, the system may present to the user, the current entered word/potion-of-a word (e.g. immediately) after its entry (e.g. speech and corresponding key press) and before an "end-of-the-word" signal has been inputted. The system may match said portion with the words of the dictionary, relate said portion to previous words/portions-of-words, current phrase context, etc., to decide which output to present to the user. The system may also, simply present said portion, as-it-is, to the user. This procedure may also enable the user to enter words without spacing between them. For example, after a selected result (e.g. word) presented to the user has been selected by him, the user may proceed to entering the following word/potion-of-a-word without adding a space character between said first word and said following word/portion-of-a word. The system will attach said two words.

Example:
"PRESS" followed by "SPEAK" results "PRESSSPEAK"

In addition to standard words in a dictionary, the word database of the system may also comprise abbreviations, words comprising special characters (e.g. "it's"), user's-made word, etc.

Referring to Fig. 33, for example, when a user presses the key 3303 and says "its", the system may select the words, "its", and "it's" assigned to said pressing action with said key and said (portion of) speech. The system may either itself select one of said words (e.g. according to phrase concept, previous word, etc.) as the final selection or it may present said selected words to the user for final selection by him. In this case the system, for example, may print the

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word with highest priority (e.g. "its") at the display of the corresponding device. If this is what the user desired to enter, then the user may use a predefined confirmation means such as pressing a predefined key or proceeding to entering the following data (e.g. text). Proceeding to entering the following data (e.g. text) may be considered by the system as the confirmation of the acceptance of the current proposed word. If said printed/proposed word is not what the user intended to enter, then the user may select the other selected words (e.g. "it's") by a selecting means provided within the system. According to another embodiment, when two words have a similar pronunciation, a phoneme-set representing of one of said words (e.g. the word "its" in the above-mentioned example) may be assigned to a first kind of interaction (e.g. a single press) with a key, and a similar phoneme-set representing the other word (e.g. the word "it's") may be assigned to a second kind of interaction (e.g. a double-press) with said key.

As mentioned previously, symbols (e.g. speech/phoneme-sets/character-sets/etc.) may be assigned to a mode/action such as double-pressing on for example, a key, combined with/without speaking. According to one embodiment of the invention, an ambiguous word(s)/part-of-a-word may be assigned to said mode/action. For example, the words "tom" and "tone" (e.g. assigned to a same key 3301) may cause ambiguity when they are pronounced by a user. One solution to disambiguate them may be in assigning each of them to a different mode/action with said key. For example, a user may single press (e.g. pressing once) the key 3301 and say "tom" (e.g. phoneme-set "tom" is assigned to said mode of interaction with said key) to enter the character-set "tom" of the example. Also said user may double-

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press the key 3301 and say "ton" (e.g. phoneme-set "ton" is assigned to said mode of interaction with said key) to enter the character-set "tone" of the example.

Also for example, a first phoneme-set (e.g. corresponding to at least part of the speech of a word) ending with a vowel may cause ambiguity with a second phoneme-set which comprises said first phoneme-set at the beginning of it and includes additional phoneme(s). Said first phoneme-set and said second phoneme-set may be assigned to two different modes of interactions with a key. This may significantly augment the accuracy of voice/speech recognition, in noisy environments. For example, the phoneme-set corresponding to the characters set "mo" may cause ambiguity with the phoneme-set corresponding to the characters set "mall" when they are pronounced by a user. For better disambiguation, each of them may be assigned to a different mode. For example, the phoneme-set of the chain of characters "mo" may be assigned to a single-press of a corresponding key and the phoneme-set of the chain of characters "mall" may be assigned to a double-press on said corresponding key.

According to another embodiment of the invention, the symbols (e.g. phoneme-sets) causing ambiguity may be assigned to different corresponding modes/actions such as pressing different keys. Although obviously it is not convenient, in the example above, the first phoneme-set (e.g. of "mo") may, for example, be assigned to a first key such as 3308, and the second phoneme-set (e.g. of "mall") may be assigned to another key.

Also, according to one embodiment of the invention, a first phoneme-set represented by a at least a character representing the beginning phoneme of said first phoneme-set may be assigned to a first action/mode (e.g. with a

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corresponding key), and a second phoneme-set represented by at least a character representing the beginning phoneme of said second phoneme-set may be assigned to a second action/mode, and so on. For example, the phoneme-sets starting with a representing character "s" may be assigned to a single press on the key 3301, and the phoneme-sets starting with a representing character such as "sh", may be assigned to a double press on, the same key 3301, or another key.

According to one embodiment of the invention, single letters (e.g. "a" to "z") may be assigned to a first mode/action (e.g. with a corresponding key) and words/portion-of-words may be assigned to a second action/mode. For example, a single letter may be assigned to a single press on a corresponding key (e.g. combining with user's speech of said letter), and a word/portion-of-a-word may be assigned to a double press on a corresponding key (e.g. combining with user's speech of said word/portion-of-a-word). According to this example, a user may combine a letter-by-letter data entry and a word/part-of-a-word data entry. For this purpose, on one hand, said user may provide a letter-by-letter data entry by single presses on the keys corresponding to the letters to be entered while speaking said letters, and on the other hand, said user may provide a word/part-of-a-word data entry by double presses on the keys corresponding to the words/part-of-words to be entered while speaking said words/part-of-words.

According to one embodiment of the invention, a means such as a button press may be provided for the above-mentioned purpose. For example, by pressing a mode button the system may enter into a character-by-character data entry system and by re-pressing the same button or pressing another button, the system may enter into a word/part-of-a-word data entry system. According to this

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embodiment, in a corresponding mode, a user may for example, enter a character or a word/part-of-a-word by a single pressing action on a corresponding key and speaking the corresponding character (e.g. letter) or word/part-of-a-word.

Also words/portion-of-words (and obviously, their corresponding phoneme-sets) having similar pronunciation may be assigned to different modes, for example, according to their priorities either in general or according to the current phrase context. In this case, for example, a first word/portion-of-word may be assigned to a mode such as a single press, and a second word/portion-of-word may be assigned to a mode such as a double press on a corresponding key, and so on. For example, words "by" and "buy" have similar pronunciations. A user may enter the word "by" by a single press on a key assigned to the letter "b" and saying "bī". Said user may enter the word "buy" (e.g. having lower priority, in general) by applying a double press on a key corresponding to the letter "b" and saying "bī". Also for example, the syllable/character-set "bi" (also pronounced "bī"), may be assigned to a third mode such as a triple tapping on a key, and so on. It is understood that at least one of said words/part-of-a-words may be assigned to a mode of interaction with another key (e.g. and obviously combined with the speech of said word/part-of-a-word).

As mentioned before, the different assembly of selected character-sets relating to the speech of at least one portion of a word may correspond to more than a word in a dictionary data base. Also as mentioned before, a selecting means such as a "select-key" may be used to select an intended word among those matched words. A higher priority (when there are more than one selected words) may be assigned to a word according to the context of the phrase to

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which it belongs. Also, higher priority (when there are more than one selected words) may be assigned to a word according to the context of at least one of the, previous and/or the following portion(s)-of -words/words.

According to one embodiment of the invention, each of said words/part-of-words may be assigned to a different mode (e.g. of interaction) of the data entry system of the invention. For example, when a user presses a key corresponding to the letter "b" and says "bē", two words "be" and "bee" may be selected by the system. To avoid the use of, for example, a "select-key", according to this embodiment, for example, a first word "be" may be assigned to a mode such as a single-press mode and a second word 'bee" may be assigned to another mode such as a double-press mode. According to this embodiment, in the example above, a user may single-press the key corresponding to "b" and say "bē" to provide the word "be". He also, may double-press the same key and say "bē" to provide the word "bee".

According to one embodiment of the invention, some of the spacing issues may also be assigned to a mode (e.g. of interaction with a key) such as a single-press mode or a double-press mode. For example, in an automatic spacing procedure, the attaching/detaching (e.g. of portions-of -words/words) functions may be assigned to a single-press or double-press mode. According to this embodiment, for example, a to-be-entered word/portion-of-a-word assigned to a double-press mode may be attached to an already entered word/portion before and/or after said already entered word/portion. For example, when a user enters a word such as the word "for" by a single press (e.g. while speaking it), a space character may automatically be provided before (or after, or both before and

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after) said word. If same word is entered by a double-press (e.g. while speaking it), said word may be attached to the previous word/portion-of-word, or to the word/portion-of-word entered after it.

In the example above, also for example, a double press after the entry of a word/portion-of-a-word may cause the same result.

According to one embodiment of the invention, for automatic spacing purposes, some of the words/part-of-the-words assigned to corresponding phoneme-sets, may include at least one space character at the end of them. In this case, when said space is not required, it may, automatically, be deleted by the system. Characters such as punctuation marks, entered at the end of a word may be located (e.g. by the system) before said space. For example:

"word " followed by "," results "word, "

According to another embodiment of the invention, for automatic spacing purposes some of the words/part-of-the-words assigned to corresponding phoneme-sets, may include at least one space character at the beginning of them. In this case, when said space is not required (e.g. for the first word of a line), it may be deleted by the system. Because the space character is located at the beginning of the words, characters such as single letters or the punctuation marks may, as usual, be entered at the end of a word (e.g. attached to it).

According to one embodiment of the invention, during data entry including automatic spacing procedure, an action such as a predefined key press for attaching the current portion/word to the previous/following portion/word

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may be provided. For example, if a space is automatically provided between two (e.g. current and precedent) words/portions, a predefined action such as a key press may eliminate said space and attach said two words/portions. Example:

"for" + " give" + a predefined key-press, results "forgive"

According to another embodiment of the invention, a longer duration of pronunciation of a vowel of a word/syllable/portion-of-a-word, ending with said vowel, may cause a better disambiguation procedure by the speech recognition of the invention. For example, pronouncing a more significant laps of time, the vowel "ô" when saying "vo" may inform the system that the word/portion-of-a-word to be entered is "vô" and not for example, the word/portion-of-a-word "vôl".

According to one embodiment of the invention, by using a predefined means such as a predefined key pressing action, the data to be inputted may be capitalized. For example, by pressing a "Caps Lock" key the letters/words/part-of-words to be entered after that may be inputted/outputted in uppercase letters Another pressing action on said "Caps Lock" key may switch back the system to a lower-case mode. It is understood that said function (e.g. "Caps Lock") may be assigned to a spoken mode. For example, to provide the beginning of capitalization procedure a user may press the key corresponding to ""Caps Lock" symbol and pronounce a corresponding speech (such as "caps" or "lock" or "caps lock" etc.) assigned to said symbol.

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According to one embodiment of the invention, a letter/word/part-of-word in lowercase may be assigned to a first mode such as a single press on a corresponding key (e.g. combined with/without the speech of said letter/word/part-of-word) and a letter/word/part-of-word in uppercase may be assigned to a second mode such as a double press on a corresponding key (e.g. combined with/without the speech of said letter/word/part-of-word). For example, to provide the word (e.g. character-set) "thought", a user may single press the key 3301 and say "thought". To produce the word (e.g. character-set) "THOUGHT", said user may double press the key 3301 and say "thought". This may permit to locally capitalize an input.

Also, according to a similar principle, a word/part-of-word having its first letter in uppercase and the rest of it in lowercase, may be assigned to a mode such as a single-press mode, double-press mode, etc.

According to one embodiment of the invention, as described in previous applications for character-by-character data entry, a letter/word/part-of-a-word may be assigned to more than one single action, such as pressing two keys simultaneously. For example, a word/part-of-a-word starting with "th", may be assigned to pressing simultaneously, two different keys assigned to the letters "t" and "h" respectively, and (eventually) speaking said word/part-of-a-word. Same principles may be assigned to words/parts-of-words starting with "ch", "sh", or any other letter of an alphabet (e.g. "a", "b", etc.).

According to one embodiment of the invention, words/part-of-a-words starting with a phoneme represented by a character may be assigned to a first mode such as a single press on a corresponding key, and words/part-of-a-words starting

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with a phoneme represented by more than one character may be assigned to a second mode such as a double-press on a corresponding key (which may be a different key). For example, words/part-of-words starting with "t" may be assigned to a single-press on a corresponding key (e.g. combined with the speech of said words), and words/part-of-words starting "th" may be assigned to a double-press, on said corresponding key or another key (e.g. combined with the speech of said words).

As mentioned before, depending on different embodiments of the invention, in different categories different dictionaries such as dictionary of words in one or more languages, dictionary of syllables/part-of-words (character-sets), dictionary of speech models (e.g. of syllables/part-of-words), etc., may be used. If necessary, two or more dictionaries in each or in whole categories may be merged. For example, a dictionary of words and a dictionary of part-of-words may be merged.

As described before, the data entry system of the invention may use any keyboard and may function with many data entry systems such as the "multi-tap" system, word predictive systems, virtual keyboards, etc. For example, on one hand, a user may enter text (e.g. letters, words) using said other systems by pressing keys of the corresponding keyboards, without speaking (e.g. as habitual in said systems) the input, and on the other hand, said user may enter data such as text (e.g. letters, words/part-of-words), by pressing corresponding keys and speaking said data (e.g. letters, words/part-of-words, and if designed so, other characters such as punctuation marks, etc.).

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As mentioned before, the data entry system of the invention may use any voice/speech recognition system and method for recognizing the spoken symbols such as characters, words-part-of words, phrases, etc. The system may also use other recognition systems such as lip-reading, eye-reading, etc, in combination with user's actions recognition systems such as different modes of key-presses, finger recognition, fingerprint recognition, finger movement recognition (e.g. by using a camera), etc. These recognition systems and user's actions have been described in previous patent applications filed by this inventor. All of the features in said previous applications (e.g. concerning the symbol-by-symbol data entry) may also be applied to macros (e.g. word/portion-of word by word/portion-of-word) data entry system of the invention.

According to another embodiment of the invention, (as described in previous applications concerning the character-by-character entry level) the system may be designed so that to input a text a user may speak words/part-of-words without pressing the corresponding keys. On the other hand, said user may press a key to inform the system of the end/beginning of a speech (e.g. a character, a part –of-a-word, a word, a phrase, etc.), a punctuation mark, a function, etc.

The data entry system of the invention may also be applied to the entry of macros such as more-than-a-word sequences, or even to a phrase entry system. For example, a user may speak two words (e.g. simultaneously) and press a key corresponding to the first letter of the first word of said two words.

Although in many paragraphs in this application and in the previous applications, for data entry purposes, key presses combined with voice/speech of

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the user have been mentioned as examples, the data entry system of the invention may be applied to other data entry means (e.g. objects such as user's fingers to which characters, words/part-of-words, etc. may be assigned) and may use other use's behaviors and corresponding recognition systems. For example (as have already been described in previous patent applications filed by this inventor), instead of (or in combination with) analyzing pressing actions on keyboard keys, the system (by for example, using a camera) may recognize the movements of the fingers of the user in the space. For example, a user may tap his right thumb (to which for example, the letter "m, n, o", are assigned) on a table and say "milk" (e.g. the word "milk" is predefinitly assigned to the right thumb). In this example, said user's finger movement combined with said user's speech may be used to enter the word "milk".

In another example and according to same principles, said other data entry means may be a user's handwritten symbol (e.g. graffiti) such as a letter, and said behavior may be user's speech. For example, by using a pen-based device (e.g. PDA, stylus, etc.) using a hand-writing recognition system, a user may write a symbol such as a letter and speak said letter to enhance the accuracy of the recognition system of the system. In another example, said user may write at least one letter corresponding to at least a first phoneme of the speech of a word/part-of-a-word, and speak said word/part-of-a-word. When said user writes said letter, the hand-writing recognition system of the device recognizes said letter and relates it to the words-part-of-the-words and/or phoneme-sets assigned to said at least one letter (or symbol). When the system hears the user's voice, it tries to match it to at least one of said phoneme-sets. If there is a phoneme-set

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among said phoneme-sets which matches to said speech, then the system selects the character-sets corresponding to said phoneme-set. The rest of the procedure (e.g. the procedure of finding final words) may be similar to the ones described in different embodiments of this application and the applications filed before by this inventor.

According to one embodiment, the data entry system of the invention as described in this application and previous applications filed by this inventor, may be summarized as follow:

A predefined number of symbols representing at least the alphanumerical characters and/or words and/or part-of-a-words of at least one language, punctuation marks, functions, etc, may be assigned to a predefined number of objects, generally keys, said symbols are used in a data such as text entry system wherein a symbol may be entered by providing a predefined interaction with a corresponding objects in, the presence of at least an additional information corresponding to said symbol, said additional information, generally, being provided without an interaction with said object, wherein said additional information being, generally, the presence of a speech corresponding to said symbol or, eventually, the absent of said speech. and wherein, said objects may also be objects such as a user's fingers, user's eyes, keys of a keyboard, etc., and said user's behavior may be behaviors such as user's speech, directions of user's finger movements (including no movement), user's fingerprints, user's lip or eyes movements, etc.

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Contrary to other data entry systems wherein many key presses are used to input few characters, the data entry system of the invention may use few key presses to provide the entry of many characters.

A Method of Configuration of Symbols on a Keypad

Different methods of configuration of symbols have been proposed in prior patent applications filed by this inventor. Fig. 43 shows a method of assignment of symbols to the keys of a keypad 4300.

As before, Letters a-z, and digits 0-9 are positioned on their standard position on a telephone-type keypad and may be inputted by pressing the corresponding key while speaking them.

Also as before, many punctuation characters and functions are assigned to the keys of said keypad and may be inputted by pressing (or double pressing) the corresponding keys without speaking them.

In this configuration, some of the punctuation marks such as "+" sign 4301, which are naturally spoken by the users, are assigned to some keys and may be inputted by pressing a the corresponding key and speaking them.

Also according to this arrangement some symbols such as the "-" sign 4302, which may have different meaning and according to a context, may be pronounced or not pronounced according to the context of the data, are positioned in a key, in two locations. They are once grouped with the symbols requiring speaking while entering them, and also grouped with the symbols which may not be spoken while entering them. To a symbol requiring speech, more than one

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speech may be assigned according to the context of the data. For example, the sign "-" 4302 assigned to the key 4303, may be inputted in different ways.

- A user may press the key 4303 and say "minus"
- A user may press the key 4303 and say "dash"
- A user may press the key 4303 without speaking.

Interchanging ambiguous symbols on the keys of a keypad

As mentioned before, some symbols such as the letters assigned to a same key of a keypad/keyboard may have substantially similar pronunciations. This may cause ambiguity for the voice/speech recognition system of the invention. Fig. 43a shows a standard telephone-type keypad 4300. Pair of letters, "d" and ""e", assigned to the key 4301 may cause ambiguity to the voice/speech recognition system of the invention when said key is presses and one of said letters is pronounced. Pair of letters, "m" and "n" assigned to the neighboring key 4302 may also cause ambiguity between them when one of them is pronounced. On the other hand, letters "e" or "d" may easily be distinguished from the letters "m" or "n". By interchanging the assignment of one of the letters of each pair to the corresponding key of the other pair, the recognition problem of said four letters (e.g. by using the press and speak data entry system of the invention) will be solved. This may slightly modify the alphabetical order configuration of a keypad, but will dramatically augment the accuracy of the data entry. Fig. 43b shows a keypad 4310 after said modification.

Automatic Spacing Method

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As previously mentioned, an automatic spacing procedure for attaching/detaching of portions-of-words/words may be assigned to a mode such as a single-press mode or double-press mode. As already described, a user may enter a symbol such as at least part of a word (e.g. without providing a space character at its end), by speaking said symbol while pressing a key (e.g. to which said symbol is assigned) corresponding to the beginning character/phoneme of said symbol (in the character by character data entry system of the invention, said beginning character is generally said symbol). According to said procedure, also for example, a user may enter a symbol such as at least part of a word (e.g. including a space character at its end), by speaking said symbol while double-pressing said key corresponding to the beginning character/phoneme of said symbol. In data entry systems requiring many key presses to enter a word, automatic spacing may be particularly beneficial.

According to the above-mentioned principles, for example, in a character-by-character data entry system of the invention, a character may be entered and attached to the previous character, by speaking/not-speaking said character while, for example, single pressing a corresponding key. Same action including a double-pressing action may cause to enter said character and attach it to said previous character, but also may add a space character after the current character. The next character to be entered will be positioned after said space character (e.g. will be attached to said space character). For example, to enter the words "see you ", a user may first enter the letters "s" and "e" by saying them while single pressing their corresponding keys. Then he may say "e" while double pressing its corresponding key. The user then may enter the letters "y"

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and "o" by saying them while single pressing the corresponding keys. He, then, may say "u" while double pressing the corresponding key.

According to another embodiment of the invention, instead of locating said space character after said current character, the system may locate said space character before said current character.

It is understood that instead of a space character, any other symbol (or group of symbols) may be considered after said character or before it. Of course, considering that a letter is part of a word, as previously described, same procedure may apply to part-of-a-word/word level of the data entry system of the invention. Again for example, a user may enter the words "prepare it", by first entering the portion "pre" by saying it while for example, single pressing the key corresponding to the letter "p". Then he may enter "pare" (e.g. including a space at the end of it) by saying "pare " while double pressing the key corresponding to the letter "p". The user then, may enter the word "it " (e.g. also including a space at the end of it) by saying it while double pressing the key corresponding to the letter "i".

QWERTY Configuration on a Keypad Having Reduced Number of Keys

According to one embodiment of the invention, the configuration and/or assignment of letters on a keypad may be according to the configuration of the letters on a QWERTY keyboard. This may attract many people who do not use a telephone-type keypad for data entry simply because they are not familiar with the alphabetical order configuration of letters on a standard telephone keypad. According to one embodiment of the invention, using such keypad combined

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with the data entry system of the invention may also provide better recognition accuracy by the voice/speech recognition system of the invention.

Fig. 44a shows as an example, a telephone-type keypad 4400 wherein alphabetical characters are arranged-on/assigned-to its keys according to the configuration of the said letters on a QWERTY keyboard. As shown, the letters on the upper row of the letter keys of a QWERTY keyboard are distributed on the keys 4401-4403 of the upper row 4404 of said keypad 4400, in the same order (relating to each other) of said letters on said QWERTY keyboard. The letters positioning on the middle letter row of a QWERTY keyboard are distributed on the keys of the second row 4405 of said keypad 4400, in the same order (relating to each other) that said letters are arranged on a QWERTY keyboard. And finally, Letters on the lower letter row of a QWERTY keyboard are distributed on the keys of a third row 4406 of said keypad 4400, in the same order (relating to each other) that they are positioned on a QWERTY keyboard.

With continuous reference to this embodiment, said alphabetical letters may be distributed on the keys of said keypad in a manner to locate ambiguous letters on different keys. Fig. 44b shows as an example, a QWERTY arranged keypad 4407 with minor modifications. In said keypad, the key assignment of the letters "M" 4408 and "Z" 4409, are interchanged in a manner to eliminate the ambiguity between the letters "M" and "N". In this example, the QWERTY configuration has been slightly modified but by using said keypad with the data entry system of the invention, the recognition accuracy may be augmented. It is understood that any other letter arrangement and modifications may be considered.

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As shown, the QWERTY keypad of the invention may comprise other symbols such as punctuation characters, numbers, functions, etc. They may be entered by using the data entry system of the invention as described in this application and the previous applications filed by this inventor.

It must be noted that alphabetical letters having a QWERTY (or any other) arrangement may be assigned to the keys of any keyboard having reduced number of keys. Said keyboard may be combined and used with the data entry system of the invention. It is understood that for better accuracy, any standard arrangement may be modified.

QWERTY Arrangement on Six Keys

According to one embodiment of the invention, the data entry systems of the invention may use a keyboard/keypad wherein alphabetical letters having a QWERTY arrangement are assigned to six keys of said keyboard/keypad. Obviously, words/part-of-words may also be assigned to said keys according to the principles of the data entry system of the invention.

As known, alphabetical letters are arranged on the keys of three rows of keys a PC keyboard according to a configuration order called QWERTY. Fig 45 shows a QWERTY keyboard 4500 wherein the letters A to Z are arranged on three rows of the keys 4507, 4508, 4509 of said keyboard. Usually, a user uses the fingers of his both hand for (touch) typing on said keyboard. By using the fingers of his left hand, a user for example, types the alphabetical keys as shown on the left side 4501 of said keyboard 4500, and by using the fingers of his right

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hand, a user for example, types the alphabetical keys situated on the right side 4502 of said keyboard 4500. According to these principles, it may be considered that the alphabetical keys of a QWERTY keyboard are arranged according to a three-row 4507, 4508, 4509 by two-column 4501-4502 table.

According to one embodiment of the invention, a group of six keys (e.g. 3 by 2) of a reduced keyboard may be used to duplicate said QWERTY arrangement of a PC keyboard on them and used with the data entry system of the invention. Fig. 45a shows as an example, six keys preferably arranged in three rows 4517-4519 and two columns 4511-4512 for duplicating said QWERTY arrangement on them. As an example, the upper left key 4513 contains the letters "QWERT", corresponding to the letters situated on the keys of the left side 4501 of the upper row 4507 of the QWERTY keyboard 4500 of the Fig. 45. The Other keys of said group of six keys follow the same principle and contain the corresponding letters situated on the keys of the corresponding row-and-side of said PC keyboard.

A user of a QWERTY keyboard usually knows exactly the location of each letter. A motor reflex permits him to type quickly on a QWERTY keyboard. Duplicating a QWERTY arrangement on six keys as described here-above, permits the user to touch-type (fast typing) on a keyboard having reduced number of keys. Said user may, for example, use the thumbs of both hands (left thumb for left column, right thumb for right column) for data entry. This looks like keying on a PC keyboard permitting fast data entry.

It is understood that the left side and right side characters definition of a keyboard described in the example above is shown only as an example. Said

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definition may be reconsidered according to user's habitudes. For example, the letter "G" may be considered as belonging to the right side rather than left side.

According to one embodiment of the invention, a keypad having at least six keys containing alphabetical letters with QWERTY arrangement assigned (as described above) to said keys, may be used with the character-by-character/at least-part-of a word by at least-part-of a word data entry system of the invention. In addition to already-described advantages, said arrangement also comprises other benefits such as:

- letters situated on a same key are usually distinguishable by the voice/speech recognition system of the invention
- high accuracy of the data entry, extremely reduced number of letter keys, and the extremely familiar arrangement (e.g. QWERTY) of said letters on said keypad permit a user a fast data entry system without the need of frequently looking at the keypad or at the display unit of the corresponding device.

For better accuracy, modifications to this arrangement may be considered. For example, Fig. 45b, shows a keypad 4520 having at least six keys with QWERTY letter arrangement as described before, wherein letters "Z" 4521 and "M" 4522 have been interchanged in order to separate the letter "M" 4522 from the letter "N" 4523. It is understood that this is only an example, and that other forms of modifications may also be considered.

It must be noted that the QWERTY arrangement assigned to few number of keys as described above, is shown and described only as an example. Other configurations of alphabetical letters (in any language) may be assigned to any number of keys arranged in any key arrangement form on a any shape of keyboard (e.g. any keypad) and used with the press and speak data entry system of the invention. Also, it is understood that other symbols such as punctuation

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marks, numbers, functions, etc., may be distributed among said keys or other keys of a keypad comprising said alphabetical keys or other keys of said keypad and be entered according to the data entry system of the invention as described in this application and the applications filed before by this inventor.

According to one embodiment of the invention, still fewer number of keys may be used to contain alphabetical letters (and other symbols as described before) and being used with the press and speak data entry systems of the invention. Fig. 45c shows as an example, four keys 4530 - 4533 having English alphabetical characters assigned to them. To keep this arrangement familiar, the QWERTY arrangement of the letters of the top two rows of the keypad 4520 of the Fig. 45b are maintained and the letters of the lowest row of said keypad 4520 of the fig. 45b are distributed within the keys of the corresponding columns (e.g. left, right) of said four keys 4530 - 4533 in a manner to maintain the familiarity of an "almost QWERTY" keyboard along with high accuracy of the voice recognition system of the invention. For example, letters "n" 4537 and "m" 4538 which have been located on the lowest right key of the keypad 4520 of the fig. 45b, are here separated and assigned, respectively, to the right keys 4533 and 4532 of the keypad 4530. It is understood that other symbols such as punctuation marks, numbers, functions, etc., may be distributed among said keys or other keys of a keypad comprising said alphabetical keys and be entered according to the data entry system of the invention as described in this application and the applications filed before by this inventor.

It is also understood that as far as the recognition accuracy is not affected, even fewer keys may be used to contain all alphabetical characters and

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be used with the press and speak data entry system of the invention. Fig. 45d shows two keys 4541-4542 (e.g. of a keypad) to which the English Alphabetical letters are assigned. Said keypad may be used with the press and speak data entry systems of the invention but ambiguity may arise for letters on a same key having substantially similar pronunciations.

Theoretically, all of the alphabetical letters may be assigned to a single key but this may extremely reduce the recognition accuracy.

Although, pressing a key and speaking a desired symbol assigned to said key may be enough for the entry of said symbol, for some reasons such as not desiring to speak some symbols, several methods such as the ones described in this application and in the previous applications concerning the data entry system of the invention may be provided. As described, a symbol may be entered by pressing a key without speaking said symbol. For example, by referring to the fig. 45c, a user may press the key 4530 without speaking to provide the space character. According to another method, a symbol may be entered by pressing a first key, keeping said key pressed and pressing a second key, simultaneously. According to another method, a special character such as a space character may be provided after a symbol such as a letter, by pressing a predefined key (e.g. corresponding to said special character) before releasing the key corresponding to said symbol.

When having few keys for data entry, for faster data entry, the entry of a frequently used non-spoken symbol such as a space character may be assigned to a double press action of a predefined key without speaking. This may be efficient, because if the space character is assigned to a mode such as a single-

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pressing a button to which other spoken characters such as letters are assigned in said mode, after entering a spoken character, (for not confusing the voice/speech recognition system) the user has to pause a short time before pressing the key (while not speaking) for entering said space character. Assigning the space character to the double-press mode of a key, to which no spoken symbol is assigned to a double-press action, resolves that problem. Instead of pausing and pressing said key once, the user simply double-presses said key without said pause. As mentioned previously, another solution is to assign the spoken and non-spoken symbols to a different keys, but this may require more keys.

Also, it is understood that the QWERTY arrangement of the letters on a group of keys as described here-above, is provided as an example. Other configuration of symbols such as the alphabetical orders, other number of keys, or any key arrangements, may be considered. For example, according one embodiment of the invention, a keypad may contain two keys for assigning the most frequently used letters, and it may have other two keys to which less frequently used letters are assigned.

Today most electronic devices permitting data entry are equipped with a telephone-type keypad. The configuration and assignment of the alphabetical letters as described before may be applied to the keys of a telephone-type keypad.

Fig. 46a shows as an example, a telephone-type keypad 4600 wherein alphabetical letters having QWERTY configuration are assigned (e.g. as described before) to six keys of two neighboring columns 4601, 4602 of said keypad. By being on neighboring columns, entry of the letters by (the thumb of)

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a single hand becomes easier. Also as mentioned before, the user may use his both thumbs (e.g. left thumb for left column, right thumb for right column) for quick data entry. It is understood that other symbols such as punctuation marks, numbers, functions, etc., may be distributed among the keys of said keypad and be entered according to the data entry system of the invention as described in this application and the applications filed before by this inventor.

Fig. 46b shows another telephone-type keypad 4610 wherein alphabetical letters having QWERTY configuration are assigned (e.g. as described before) to six keys of two exterior columns 4611, 4612 of said keypad. By being on two exterior columns, entry of the letters by (the thumbs of) two hands becomes easier. Also as mentioned before, the user may use a single hand for data entry. In this example, minor modifications have been applied for augmenting the accuracy of the voice/speech recognition system of the invention. For example, letters "m" and "k" have been interchanged on the corresponding keys 4613, 4614 to avoid the ambiguity between the letters "m" and "n". Also, letters "f" and "z" have been interchanged on the corresponding keys to avoid the ambiguity between the letters "f" and "s". It is understood that other changes in the configuration may be considered. For faster data entry some characters such as the space character may be assigned to several keys 4615, 4616.

Fig. 46c shows another telephone-type keypad 4620 wherein alphabetical letters arrangement based on principles described before and showed in fig. 45c are assigned to four keys of said keypad.

It is understood that the QWERTY arrangement of letters on few (e.g. 6, 4, 2. etc.) keys of a keyboard such as a keypad is described as example. Other

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kind of letter arrangements such as alphabetical order may also be considered and assigned to few keys such as two/three/four/five/six, etc., keys.

Obviously, all of the data entry systems (and their corresponding applications) of the invention such as a character by character data entry and/or word/part-of-a-word by word/part-of-a-word data entry systems of the invention may use the above-mentioned keypads just described (e.g. having few numbers of keys such as 4 to six keys).

A personal mobile computer/telecommunication device

A mobile device must be small to provide easy portability. An ideal mobile device requiring data (e.g. text) entry and/or data communication must have small data entry unit (e.g. at most, only few keys) and a large (e.g. wide) display.

The arrangement of alphabetical letters (and other symbols) on few keys and the capability of quick and accurate complete data entry provided by the data entry systems of the invention through said few keys, may permit to reconsider the design of some of the current products for making them more efficient.

One of those products is the mobile phone which is now used for the tasks such as text messaging and the internet, and is predicted to become a mobile computing device. The actual mobile phone is designed contrary to the principles described here-above. This is because the (complicated) data entry systems of the mobile phones require the use of many keys, using a substantial

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surface of the phone, providing slow data entry, and leaving a small area for a small (e.g. narrow) display unit.

One of the most commonly used applications of a computer is the word processing procedure. Along with the use of the Internet, writing letters will also become the most commonly used application of a mobile computer/communication device. Said application requires a wide display to permit drafting, formatting, and viewing the document preferably in its entire width. For example, while editing a letter, the user must see said document in its entire width, without being obliged to scroll it to the left or to the right.

According to one embodiment of the invention, an electronic device such as a mobile computing/communication device comprising a wide display and small data entry unit having quick data entry capability may be provided. Fig. 47a shows a mobile computing/communication device 4700 having two rows of keys 4701, 4702 wherein the alphabetical letters (e.g. preferably, having QWERTY arrangement as described before) are assigned to them. Other symbols such as numbers, punctuation marks, functions, etc. may also be assigned to said keys (or other keys), as described before. Said keys of said communication device may be combined with the press and speak data entry systems of the invention to provide a complete quick data entry. Use of few keys (e.g. in two rows only) for data entry, permits to integrate a wide display 4703 within said device. The width of said mobile device (and obviously, said display unit) may be approximately the width of an A4 paper to provide an almost real size (e.g. width) document for viewing. Said mobile computing/communication device may also have other buttons such as the buttons 4704, 4705 for functions such as scrolling the document to

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upward/downward, to left/right, navigating a cursor 4706 within said display 4703, send/end functions, etc. Also said device may comprise a mouse (e.g. a pointing device) within, for example, the backside or any other side of it. In several patent applications (such as "stylus Computer", and "Features to Enhance Data Entry") filed by this inventor mouse/browsing issues on a display and other data entry enhancement means have been described. All of said issues/features of said applications may be combined between them and/or combined with the data entry system and data communication devices of this invention.

With continuous description of Fig. 47a, the arrangement of the keys in two rows 4701, 4702 on left and right side of said communication device 4700 permits the user to thumb-type with his two hands while holding said device 4700. It is understood that other configuration of letters and other symbols on other arrangement of keys on said device may be considered. For example, the device may comprise only few keys arranged in only one row wherein said symbols (e.g. letters) are assigned to them.

Also as mentioned before and described in corresponding patent application, by providing a mouse (not shown) in the backside of said device wherein the key(s) of said mouse being preferably, in the opposite side (e.g. front side) of said electronic device, the user may use for example, his forefinger, for operating said mouse while pressing a relating button with his thumb.

Also, as mentioned, said device may be used as a telephone. It may comprise at least one microphone 4707 and at least a speaker 4708. The distance

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between the location of said microphone and said speaker on said device may correspond to the distance between mouth and ear of a user.

Fig. 47b shows as an example, a device 4710 similar to that of the fig. 47, wherein its input unit comprises four keys only, arranged in two rows 4711, 4712 wherein the alphabetical letters and generally numbers are assigned to said keys according to principles already described. Other symbols and functions (not shown) may also be assigned to said keys and/or other keys according to the principles already described. A user may use his two thumbs 4713, 4714 for typing.

Fig. 47c shows as an example, a device 4720 similar to that of the fig. 47b, wherein its input unit comprises four keys only arranged in two rows 4721, 4722 located on one side of said electronic device, wherein the alphabetical letters and generally numbers are assigned to said keys according to principles already described. Other symbols and functions (not shown) may also be assigned to said keys and/or other keys according to the principles already described. A user may use one hand (or two hands) for data entry. A nub 4723 may be provided in the center of arrangement of said four keys to permit data entry without looking at the keypad.

Fig. 47d shows as an example, a device 4730 similar to that of the fig. 47c, wherein its input unit comprises four keys arranged in two rows 4731, 4732 located on one side of said electronic device, wherein the alphabetical letters and generally numbers are assigned to said keys according to principles already described. A third row of keys 4733 duplicating one of said first two rows of keys (in this example, 4731), is positioned at the opposite end of said electronic device 4730. This

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arrangement of keys permits the user to enter data with one or two hands at his choice. Other symbols and functions (not shown) may also be assigned to said keys and/or other keys according to the principles already described.

Fig. 47e shows as an example, an electronic device 4740 designed according to the principles described in this application and similar to the preceding embodiments with the difference that here an extendable/retractable/foldable display 4741 may be provided within said electronic device to permit a large display while needed. For example, by using an organic light-emitting diode (OLED) display, said electronic device may be equipped with a one-piece extendable display. It is understood that said display may be extended as much as desired. For example, said display unit may be unfolded several times to provide a large display. It may also be a rolling/unrolling display unit so that to be extended as much as desired. It is understood that the keys of said data entry system of the invention may be soft keys being implemented within a surface of said display unit of said electronic device.

According to one embodiment of the invention, as shown in fig. 47f, an electronic device 4750 such as the one described before, may comprise a printing unit (not shown) integrated within it. Although said device may have any width, preferably, the design of said electronic device (e.g. in this example, having approximately the width of an A4 paper) may be such that a printing/scanning/copying unit using for example, an A4 paper may be integrated within said device. For example, a user may feed an A4 paper 4751 to print a page.

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Providing a complete solution for a mobile computing/ communication device may be extremely useful in many situations. For example, a user may edit documents such as a letter and print them immediately. Also for example, a salesman may edit a document such as an invoice in client's promises and print it for immediate delivery.

To permit reducing the size of said mobile computing/communication device and still being capable of printing a standard size paper such as an A4 paper, a device corresponding to the size of half of said standard size paper may be provided.

Fig. 47g shows a standard blank document 4760 such as an A4 paper. As shown in Fig. 47h, said paper may be folded at its middle, providing two half faces 4761, 4762. As shown in Fig. 47i said folded document 4771 may be fed into the printing unit of an electronic device 4770 such as the mobile computing/communication device of the invention to print a page of a document such as an edited letter, on its both half faces 4761, 4762 providing a standard sized printed letter. This will permit manufacturing of a small sized mobile electronic device being capable of printing a standard size document.

Circular Keyboard

According to one embodiment of the invention, at least part of the keys of a keypad may be positioned on said keypad in a manner to create a circular form. Fig 48 shows as an example, a keypad 4800 comprising six keys 4801-4806 positioned around a centered key 4807. Said centered key 4807 may be physically

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different than said other six keys. For example, said key 4807 may be bigger than the other keys, or it may be have a nub on it. Alphabetical letters having, for example, QWERTY configuration may be distributed among said keys. A space character may be assigned to the key 4807 situated in the center. Of course said keys may also comprise other symbols such as numbers, punctuation marks, functions, etc as described earlier in this application and the applications before and be used by the data entry systems of the invention. The advantage of this kind (e.g. circular) of key arrangement on a keypad is that, by recognizing said centered, key by touching it, a user may type on said keys without looking at the keypad.

A Wrist Communication Device

The data entry systems of the invention may permit to create small electronic devices with capability of complete, quick data entry. One of the promising future telecommunication devices is a wrist communication device. Many efforts have been provided to create a workable wrist communication/organizer device. The major problem of such device is workable relatively quick data entry system. Some manufacturers have provided prototypes of wrist phones using voice/speech recognition technology for data entry. Of course, hardware and software limitation of such devices provide poor data entry results. The data entry system of the invention combined with use of few keys as described in this application and the applications filed before by this inventor may resolve this problem and permit quick data entry on very small devices. Fig. 49

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shows as an example, a wrist electronic device 4900 comprising few keys (e.g. in this example, four keys arranged in two rows 4901, 4902) wherein symbols such as alphabetical letters, numbers, punctuation marks, etc., are assigned to said keys according to the principles of the data entry systems of this invention. Said electronic device also comprises a data entry system of the invention using at least said keys. Said keys may be of any kind such as resembling to the regular keys of a mobile phone, or being touch-sensitive, etc. Touch sensitive keys may permit touch-typing with two fingers 4903, 4904 of one hand. A display unit 4905 may also be provided for viewing the data entered, the data received, etc. A watch unit 4906 may also be assembled with said wrist device. Said wrist device may also comprise other buttons such as 4907, 4908 for functions such as send/end, etc.. It must be noted that for faster data entry, a user my remove the wrist device from his wrist and use the thumbs of both fingers, each for pressing the keys of one row of keys. It is understood that other number of keys (e.g. 6 keys as described before) and other key arrangements (e.g. such as the circular key arrangement described before) may be considered.

It is also understood that other kinds of designs for a wrist communication/organizer device may be considered. For example, as shown in Fig. 49a, a flip cover portion 4911 may be provided with a wrist device 4910. Said device 4910 may for example, comprises most of the keys 4913 used for data entry, and said flip cover 4911 may comprise a display unit 4912 (or vise versa). As shown in Fig. 49b, on the other side of said flip cover, a display unit 4921of a watch unit may be installed. In closed position, said wrist device may resemble, and be used as, a wristwatch.

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It is understood that the wrist devices shown and described here above are shown only as examples. Other types of wrist devices may be considered with the press and speak data entry system of the invention requiring the use of only few keys. For example, as shown in fig. 50a, a wrist communication device 5000 comprising the data entry system of the invention using few numbers of keys 5003, may be detachabely-attached-to/integrated-with the bracelet 5001 of a watch unit 5002. Fig. 50b shows a wrist device 5010 similar to the one 5000 of the fig. 50a with the difference that here the display unit 5011 and the data entry keys 5012 are separated and located on a flip cover 5013 and the device main body 5014, respectively (or vise versa). It is noted that said keys and said watch unit may be located in opposite relationship around a user's wrist.

As mentioned, the data entry systems of the invention may be integrated within devices having few numbers of keys. A PDA is an electronic organizer that usually uses a handwriting recognition system or miniaturized virtual QWERTY keyboard wherein both methods have major shortcoming providing slow and frustrating data entry procedure. Usually most PDA devices contain at least four keys. The data entry system of the invention may use said keys according to principles described before, to provide a quick and accurate data entry for PDA devices. Other devices such as Tablet PCs may also use data entry system of the invention. Also, for example, according to another method , as mention, few large virtual (e.g. soft) keys (e.g. 4, 5, 6, 8, etc) such as those shown in fig.49a, may be designated on a display unit of an electronic device such as a PDA, Tablet PC, etc. and used with the data entry system of the invention. As an example, the arrangement and configuration of the keys on a

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large display such as the display unit of a Tablet PC may resemble to those shown in Figs. 47a-47d.

Movement-Tracking for Data Entry

Dividing a group of symbols such as alphabetical letters, numbers, punctuation marks, functions, etc., in few sub-groups and using them with the press and speak system of the invention may permit the elimination of use of button pressing action by, eventually, replacing it with other user's behavior recognition systems such as recognizing his movements. Said movements may be the movements of for example, fingers, eyes, face, etc., of a user. This may be greatly beneficial for user's having limited motor ability, or in environments requiring more discrete data entry system. For example, instead of using four keys, four movement directions of a user's body member such as one or more fingers, or his eye may be considered.

According to one embodiment of the invention, and by referring to fig. 45c and considering that symbols of a data entry system are arranged on four zones as an example, a user may move his eyes (or his face, in case of face tracking system, or his fingers in case of finger tracking system) to the upper right side and say "Y" for entering said letter. Same movement without speaking may be assigned to for example, the punctuation mark "." 4535. To enter the letter "s", the user may move his eyes towards lower left side and say "S". By using only few clearly/easily recognizing movements of a user assigned to few sub-group of symbols combined with a feature (of the data entry system of the

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invention) such as speaking a desired symbol, the data entry system of the invention will provide quick and accurate data entry without requiring hardware manipulations (e.g. buttons). As noticed, in this embodiment a predefined movement of user's body member may replace a key press in other embodiments. The rest of the procedures of the data entry systems of the invention may remain as they are.

It is understood that as described in previous applications instead of keys other objects such as a sensitive keypad or user's fingers may be used for assigning said subgroups of symbols to them. For example, for entering a desired symbol, a user may tap his finger (to which said symbol is assigned) on a desk and speak said letter assigned to said finger and said movement. Also instead of recognizing the voice (e.g. of speech) of the user other user's behavior and/or behavior recognition systems such as lip reading systems may be used.

One of the major problems for the at-least-part-of-a-word level (e.g. syllable-level) data entry of the invention is that if there is an outside noise and the speech of said part-of-the-word ends with a vowel, the system may misrecognize said speech and provide an output usually corresponding to the beginning of the desired portion but ending with a constant. for example, if a user says "mo" (while pressing the key corresponding to the letter "m"), the system may provide an output such as "mall". To eliminate this problem some methods may be applied with the data entry system of the invention.

According to one embodiment of the invention, as proposed previously, words/portion-of-a-words ending with a vowel pronunciation may be grouped with the words/portions having similar beginning pronunciation but ending with a consonant.

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After said words/portions are entered, the dictionary comparison and phrase structure will decided what was is the desired portion to be inputted. For example, word/portion-of-a-word "mo" and "mall" which are assigned to a same key may also be grouped in a same category, meaning that when a user presses said key and either says "mo" or "mall" in each of said cases the system considers the corresponding character-sets of both phoneme-sets. This is because there should be considered that the pronunciation of said two phoneme-sets "mo" and "mall" (specially, in noisy environments) are substantially similar and may be misrecognized by the voice recognition system.

According to one embodiment of the invention, a keypad wherein the alphabetical letters are arranged on for example, two columns of its keys may be used for at least the at-least-part-of-a-word level (e.g. syllable-level) data entry system of the invention.

Fig. 51 shows as an example, a keypad 5100 wherein the alphabetical letters are arranged on two columns of keys 5101 and 5102. Said arrangement locates letters/phonemes having closed pronunciation on different keys. Said arrangement also reminds a QWERTY arrangement with some modifications. In this example, the middle column does not contain letter characters. Different methods of at-least-part-of-a-word level (e.g. syllable-level) data entry system of the invention as described earlier may use said type of keypad or other keypads such as those shown in previous figs. having few keys, such the figs. 45a to 45d.

As described earlier, according to one embodiment of the invention, if a word/portion-of-a-word ends with a vowel, a user may press a key of said keypad corresponding to the beginning phoneme/letter of said word/portion-of-

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a-word and speak said word/part-of-a-word, for entering it. If necessary, for providing more information about said portion, a user may press additional keys corresponding to at least part of the letters constituting said portion. For example, if said word/part-of-a-word ends with a consonant phoneme, the user may press an additional key corresponding to said consonant.

To permit the system to distinguish between a key press corresponding to the beginning letter/phoneme of a word/portion-of-a-word and a key press corresponding to for example, the last letter/phoneme of said word/portion-of-a-word, different methods such as the ones described hereafter, may be provided.

According to one embodiment of the invention, when a user presses a first key corresponding to the beginning phoneme/letter of a word/portion-of-a-word while speaking it, he may keep said key pressed, and press at least an additional key corresponding to another letter (preferably the last consonant) of said word/portion-of-a-word.

If said another letter is located on a same beginning key, the user may double-press said key while speaking said word/part-of-a-word.

Fig. 51a shows a keypad 5110 wherein alphabetical characters (shown in uppercase) are arranged on two columns of its keys 5111, 5112. Each of said keys containing said alphabetical characters also contains the alphabetical characters (shown in lowercase) as assigned to the opposite key of the same row. According to one embodiment of the invention, When a user attempts to enter a word/part-of-a-word, he presses the key corresponding to the beginning character/phoneme of said word/part-of-a-word printed in uppercase (e.g. printed in uppercase on said key) and speaks said word/part-of-a-word. If said user

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desires to provide more information such as pressing a key corresponding to an additional letter of said word/part-of-a-word, (while keeping said first key pressed) said user may press a key situated on the opposite column corresponding to said additional letter (e.g. printed in uppercase or lowercase on a key of said opposite column) of said word/part-of-a-word. For example, if a user desires to enter the word "fund", he first presses the key 5113 and says said word, and (while keeping said key 5113, pressed) said user presses consecutively, for example, two additional keys 5114 and 5115 corresponding to the consonants "n", and "d".

Fig. 51b shows a keypad 5120 similar to the keypad of the fig. 51a with the difference that, here two columns 5121 and 5122 are assigned to the letters/phonemes corresponding to a beginning phoneme/letter of a word/part-of-a-word, and an additional column 5123 is used to provide more information about said word/part-of-a-word by pressing at least a key corresponding to at least a letter other than the beginning letter of said word/part-of-a-word. This may permit a data entry using one hand only. For example, if a user desires to enter the word "fund", he first presses the key 5124 and says said word, and (after releasing said key 5124) said user presses consecutively, for example, two additional keys 5125 and 5126 corresponding to the consonants "n", and "d".

According to another embodiment of the invention, as mentioned above, symbols requiring a speech (for entering them), may be assigned to a first predefined number of objects/keys, and symbols to be entered without a speech, may be assigned to another predefined number of keys, separately from said first predefined number of keys.

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According to another embodiment of the invention, if the keys providing letters comprise only spoken symbols, then the user may press a key corresponding to a first letter/phoneme of said word/part-of-a-word and, preferably simultaneously, speaks said word/part-of-a-word. He then may press additional key(s) corresponding to additional letter(s) constituting said word/part-of-a-word without speaking. The system recognizes that the key press(es) without speech corresponds to the additional information regarding the additional letter(s) of said word/part-of-a-word. For example, by referring to the fig. 51 and considering that to the keys providing letters, of said keypad, only spoken symbols are assigned, if a user desires to enter the word "fund", he first presses the key corresponding to the letter "f" while saying "fund", and after releasing said key said user presses consecutively, for example, two additional keys corresponding to the letters "n", and "d" without speaking.

As mentioned before, the word/portion-of-a-word data entry system of the invention may also function without the step of comparing the assembled selected character-sets with a dictionary of words/portions-of-words. A user may enter a word, portion by potion, and have them inputted directly. As mentioned, this is useful for entering a-word/part-of-a word in different languages without worrying about its existence in a dictionary of words/portions-of-words. A means such as a mode key may be used to inform the system that the assembled group of characters will be inputted/outputted without said comparison. If more than one assembled group of characters has been produced they may be presented to the user (e.g. in a list printed at the display) and the user may select one of them by, for example, pressing a "select" key. In another embodiment, if more than one assembled group

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of characters has been produced, an assembled group of character having the highest priority may be inputted automatically by proceeding to, for example, the entry of a next word/portion-of-a word, a punctuation mark, a function such as "enter", etc.

Also, According to said principles described earlier in this application, a word may be inputted by entering it portion-by-portion with/without the step of comparison with a dictionary of words. Also as described before, said portion may be a character or a group of characters of a word (a macro).

According to one embodiment of the invention, in addition to the alphabetical letters, the character by character data entry system of the invention may use a limited number of frequently used portion-of-a-words (e.g. tion", "ing", "sion", "ment", "ship", "ed", etc.) and/or limited number of frequently used words (e.g. "the", "and", "will", etc.,) to provide a quick and accurate data entry system requiring small amount of memory and faster processing. Said limited number of words/portion-of-a-words may be assigned to the corresponding (interaction with the) keys of a keypad according to the principles of the data entry system of the invention as described in this application and the applications filed before. Also, obviously, the may inputted according to the principles of the data entry system of the invention as described in this application and the applications filed before. According to this embodiment, for example, a user may enter the word "portion", in four portions "p", "o", "r", and "tion". To do so, for example by using the keypad of the figure 45c, said user may first say "p" and press (preferably, almost simultaneously) the corresponding key 4533. He, then, may say "o" and press (preferably, almost simultaneously) the corresponding key 4533. Then, said user

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may say "r" and press (preferably, almost simultaneously) the corresponding key 4530. And finally, he may say "shen" (e.g. pronunciation of the portion-of-a-word, "tion") and press (preferably, almost simultaneously) the key 4530 (e.g. corresponding to the letter "t", the first letter of the portion-of-a-word, "tion") to which the portion "tion" is assigned.

As mentioned before, this embodiment of the invention may be processed with/without the use of the step of comparison of the inputted word with the words of a dictionary of words as described before in the applications. In case of not using said comparison step, the data may be inputted/outputted portion by portion.

As mentioned, this embodiment of the invention is beneficial for the integration of the data entry system of the invention within small devices (e.g. wrist-mounted electronic devices, cellular phones) wherein the memory size and the processor speed are limited. In addition to (or in replacement of) said list of frequently used words/portion-of-a-words, a user may also add his preferred words/portion-of-a-words to said list.

As previously described, the data entry system of the invention may use few numbers of keys for a complete data entry. It is understood that instead of said few keys, a single multi-modal/multi-section button having different predefined sections wherein each section responding differently to a user's action/contact on said each of said different predefined sections of said multi-mode/multi-section button, may be provided wherein characters/phoneme-sets/character-sets as described in this invention may be assigned to said action/contact with said predefined sections. Fig. 52 shows, as an example, a multi-mode/multi-section button 5200 (e.g. resembling to a multi/mode button used in many electronic

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games, cellular phones, remote controllers of TVs, etc.) wherein five sections 5201-5205 of said button, each respond differently to user's finger action (e.g. pressing) /contact on said section. As an example, different alphanumeric characters and punctuations may be assigned to four 5201-5204 of said sections and the space character may be assigned to the middle section 5205. It is understood that said button 5200 may have a different shape such as an oval shape, and may have different number of sections wherein different configuration of symbols may be assigned to each of said portions.

As described before and shown as example in figs. 47a to 47i, an electronic device such as a mobile computing/communication device comprising a wide display and small data entry unit having quick data entry capabilities due to data entry system of the invention, may be provided. Also as mentioned previously, said electronic device may comprise additional buttons. Fig. 53, shows an electronic device 5300 comprising keys 5302, 5303 (in this example, bi-directional keys) for entering text and corresponding functions, and additional rows of buttons 5304, 5305 for entering other functions such as dialing phone numbers (e.g. without speaking said numbers), navigating within the display, sending/receiving a call, etc. A group of symbol for at least text entry, as described in this invention, may be assigned to pressing each side of a bi-directional key such as the keys 5302-5303. A bi-directional key may correspond to two separate keys. Manipulating a bi-directional key may be easier than manipulating two separate keys. In the example of this embodiment, a user may enter the data by using the thumbs 5306, 5307 of his two hands.

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As mentioned in different paragraphs of this patent application and the previous ones filed by this inventor, it is understood that other kinds of keys such as virtual (soft) keys may be used with the data entry system of the invention. Also, at least part of the additional data entry features described in this patent application and the previous ones applied by this inventor may be integrated within the computer/telecommunication device of the invention. For example, an extendable (e.g. detachable) microphone/camera/ antenna 5301, and a mouse (not shown) within the backside of said device (e.g. to be manipulated by the user's forefinger) wherein its corresponding keys being on the front side or on any other side of said computer/telecommunication device, as described earlier, may be implemented.

As mentioned before, part/all of the symbols available for a complete data entry may be assigned to few keys and be used with the data entry system of the invention to provide a complete quick and easy data entry. Said few keys may be part of the keys of a keypad. Fig. 54 shows another example of the assignments of the symbols of a PC keyboard to few keys 5400. In this example, the arrows for navigation of a cursor (e.g. in a text) on a display, may be assigned to a spoken mode. For example, a user may single-press the key 5401 and say "left" to move the cursor (e.g. in a text printed on the display) one character left. To move the cursor several characters left, said user may press the key 5401 while saying "left" and keep said key pressed. The cursor may keep moving left until the user releases said key 5401. To move said cursor to the right, the user may press the key 5402 while saying, for example "right", and using the procedure which just described. Similar procedures may be used for

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moving the cursors up and down in a text by pressing the corresponding keys and saying corresponding words.

According to one embodiment of the invention, moving the cursor in several directions (such as left, right, up, and down) may be assigned to at least one key. With continuous reference to Fig. 54, as an example, moving the cursor in different directions may be assigned to a single key 5403. For example, a user may press the key 5403 and say "left" to move said cursor to the left. To move the cursor to the right, up, or down, said user may press the key 5403 and say "right", "up", or "down", respectively.

It is understood that in this example, the number of keys (to which part/all symbols available for a complete data entry may be assigned) are demonstrated only as an example. Said number of keys may be different according to the needs such as the design of an electronic device.

According to one embodiment of the invention, a keypad/data-entry-unit of the invention having a few keys may comprise additional features such as a microphone, a speaker, a camera, etc. Said keypad may be a standalone unit being connected to a corresponding electronic device. Said standalone keypad may permit to integrate a display unit covering substantially a whole side of said electronic device. Fig. 55a shows a standalone keypad 5500 of the invention having at least few keys (or at least a multi-directional key corresponding to said few keys) 5501, 5507,5508,5509 to which part/all of the symbols available for a complete data entry may be assigned for data (e.g. text) entry. Said keypad may also comprise additional features such as a microphone 5502, a speaker 5505, a camera 5503, etc. Said additional features may be integrated within said keypad,

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or being attached/connected to it, etc. As shown in Fig. 55b, said keypad 5500 (shown by its side view) may also comprise attaching means 5504 to attach said keypad to another object such as a user's finger/wrist. Said keypad may be connected (wirelessly or by wires) to a corresponding electronic device. Fig. 55c, shows a standalone keypad 5510 according to the principles just described. As mentioned before, by using few keys combined with the data entry system of the invention for a complete data entry, after a short period of exercise, a user may enter complete data such as text through said few keys without looking at said keys. Based on this principle, a user may hold said keypad 5510 in (e.g. the palm of) his hand 5511, position it closed to his mouth (by bringing his hand closed to his mouth), and press the desired keys while not-speaking/speaking-the-symbols (e.g. characters, letters, words/part-of-words, functions corresponding to said key presses) according to the principles of the data entry system of the invention, without looking at the keys. As mentioned, said keypad may be, wirelessly or by wires, connected to a corresponding electronic device. In this example, the keypad is connected by a wire 5512 to a corresponding device (not shown). Also in this example, a microphone 5513 is attached to said wire 5512. Holding said keypad 5510 in (e.g. the palm) of a hand closed to the mouth for data entry has many advantages such as:

- a user does not have to wear a head-worn microphone
- said user may speak very closed to the microphone, therefore he may speak discretely
- the cavity of the user's palm may accentuate the user's voice for better reception by the microphone
- the (e.g. palm of) the hand of the user substantially eliminates the outside noise while speaking
- the (e.g. palm of) the hand of the user prevents the user's voice to be spread (e.g. not disturbing the others).

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It is understood that the standalone keypad/data-entry-unit of the invention may also comprise part/all of the features described in this application and the previous applications filed by this inventor. For example, said standalone keypad/data-entry-unit may comprise a camera to, for example, be used with the lip-reading system of the invention. It also may comprise a means based on the denture recognition system of the invention. Said keypad may also comprise other features such as a battery, wireless means to connect said keypad to a corresponding device. An antenna may also be implemented with said keypad. In case of wired connection, said wire may also comprise an antenna system of the keypad and/or the corresponding electronic device.

According to one embodiment of the invention, as shown in Fig. 55d, the standalone keypad 5520 of the invention may be used as a necklace/pendent. This permits easy and discrete, portability and use, of the keypad/data-entry-unit of the invention.

According to one embodiment of the invention, as shown in Fig. 55e, the standalone keypad 5530 of the invention may be attached-to/integrated-with a pen of a touch sensitive display such as the display of a PDA/TabletPC. This permits easy and discrete, portability and use, of the keypad/data-entry-unit of the invention.

According to one embodiment of the invention, as shown in Fig. 55f, the keypad of the invention having few keys may be a multi-sectioned keypad 5540 (shown in closed position). This will permit to still more reduce the size of said keypad permitting to provide an extremely small sized keypad through which a

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complete data entry may be provided. A multi-sectioned keypad has already been invented by this inventor and patent applications have been filed. Some/all of the descriptions and features described in said applications may be applied to the multi-sectioned keypad of the invention having few number of keys.

According to one embodiment of the invention, as shown in Fig. 55g, the keypad/data-entry-unit of the invention having few number of keys 5550, may comprise a pointing unit (e.g. a mouse) within the backside (or other sides) of said keypad. Said pointing unit may be of any type such as a pad-type 5551 or a balled-type (not shown). The keys of said pointing unit may be unit may be located on the front side of said data entry unit. A point-and-click (e.g. mouse) unit located in a side such as the backside of a data-entry-unit has already been invented by this inventor and patent applications have been filed accordingly. Some/all of the descriptions and features described in said applications may be applied to the multi-sectioned keypad of the invention having few keys. For example, at least one of the keys of said keypad may function also as the key(s) of said pointing unit which is located at the backside of said keypad.

Fig 55h shows data entry device 5560 of the invention having a data entry unit 5561 comprising few keys 5565-5568. Said device also has a point-and-click (e.g. mouse) unit to work in combination with said data entry unit for a complete data entry and manipulation of data. Said device and its movements on a surface may resemble to a traditional computer mouse device. Said integrated device may be connected wirelessly or be wires 5562 to a corresponding electronic instrument such as a computer. As shown in fig. 55i, a pointing (e.g. mouse) unit 5569 may be located in a side such as the backside of said data-entry-unit 5561 (not shown here,

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located on the other side of said device) of said. Said pointing (e.g. mouse) unit 5569 may be a track-ball-type mouse. A user may manipulate/work-with a computer using said integrated data entry device 5560 combined with the data entry system of the invention, replacing the traditional PC keyboard and mouse. Keys of the mouse may be the traditional keys such as 5563, 6664 (see fig. 55h), or their functions may be assigned to said few keys (5565-5568, in this example) of said data entry unit 5561.

According to one embodiment of the invention, as mentioned in this patent application and the previous patent applications filed by this inventor, the data entry system of the invention may be combined with a word predictive software. For example, a user may enter at least one beginning character of a word by using the data entry system of the invention (e.g. speaking a part-of-a-word corresponding to at least one character) while pressing corresponding key(s), and continue to press the keys corresponding to the rest of said word without speaking them. The precise entry of the beginning letters of said word (due to accurate data entry system of the invention) along with the pressing of the keys (without speaking) corresponding to the remaining letters of said word may permit an accurate data entry system also permitting less speech. It is understood that in this embodiment, symbols other than letters, may preferably be assigned to separate keys or to separate interactions with the same keys.

According to one embodiment of the invention, the keypad/data entry unit of the invention having few keys, may be attached/integrated with a traditional earbud of an electronic device such as a cell phone. Fig. 55j shows a traditional earbud_5570 used by a user. The earbud may comprise a speaker 5571, a microphone 5572 and a keypad/data entry unit of the invention 5573

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(multi-sectioned keypad, in this example). it is understood that the keypad/data entry unit of the invention may be used with a corresponding electronic device for entering key presses while a separate head microphone is used for entering a user's corresponding speech.

Sweeping procedures Combined with the Data Entry System of the Invention

As mentioned before, the data entry system of the invention may use any kind of objects such as few keys, one or more multi-mode (e.g. multi-directional) keys, one or more sensitive pads, user's fingers, etc. Also as mentioned, said objects such as said keys may be of any kind such as traditional mobile-phone-type keys, touch-sensitive keys, keys responding to two or more levels of pressure on them (e.g. touch level and more pressure level), soft keys, virtual keys combined with optical recognition, etc.

As mentioned before, when entering a portion of a word according to the data entry systems of the invention, for better recognition, in addition to providing information (e.g. key press and speech) corresponding to a first character/phoneme of said portion, a user may provide additional information corresponding to more characters such as the last character(s), and/or middle character(s) of said portion.

According to one embodiment of the invention, as shown in Fig. 56, a touch sensitive surface/pad 5600 having few predefined zones/keys such as the zones/keys 5601-5604 may be provided and work with the data entry system of the invention. To each of said zones/keys a group of symbols according to the

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data entry systems of the invention may be assigned. The purpose of this embodiment is to enhance the word/portion-of-a-word (e.g. including the character-by-character) data/text entry system of the invention. According to this embodiment, to provide a single character data entry, a user may for example, single/double press a corresponding zone/key combined-with/without speech (according to the data entry systems of the invention, as described before). To enter a word/portion-of-a-word having at least two characters, while speaking said word/portion-of-a-word, the user may sweep, for example, his finger or a pen, over at least one of the zones/keys of said surface, relating to at least one of the letters of said word/portion-of-a-word. The sweeping procedure may, preferably, start from the zone corresponding to the first character of said word/portion-of-a-word, and also preferably, end at a zone corresponding to the last character of said word/portion-of-a-word, while eventually, (e.g. for helping easier recognition) passing over the zones corresponding to one or more middle character of said word/portion-of-a-word. The entry of information corresponding to said word/portion-of-a-word may end when said user removes (e.g. lifts) said finger (or said object) from said surface/sensitive pad. It is understood that the speech of the user may end before said corresponding sweeping action ends, but the system may consider said whole corresponding sweeping action.

According to another embodiment of the invention, for entering a word/part-of-a-word, while speaking it, a user may sweep his finger over the zones/keys (if more then one consecutive characters are represented by a same zone/key, accordingly, sweeping in several different directions on said same

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zone/key) corresponding to all of the letters of a said word/part-of-the-word to be entered. With reference to the fig. 56a, for example, to enter the word/portion-of-a-word "for", while saying it, a user may sweep his, for example finger or a pen, over the zones/keys 5612, 5614, and 5611, corresponding to the letters "f", "o", and "r", respectively (demonstrated by the multi-directional arrow 5615). The user, then, may lift his finger from said surface (e.g. sensitive pad) informing the system of ending the entry of the information corresponding to said word/portion-of-a-word.

According to another embodiment of the invention, for quicker interaction, to enter a word a user may sweep his finger over the zones corresponding to some of the letters of said word/part-of-a-word to be entered. With reference to the fig. 56b, for example, to enter the word/portion-of-a-word, "for", while saying it a user may sweep his, for example finger or a pen, over the zones 5622, 5621 (demonstrated by the arrow 5625) starting from the zone 5622 (e.g. corresponding to the letter "f") and ending at the zone 5621 (e.g. corresponding to the letter "r") without passing over the zone 5624 corresponding to the letter "o".

The advantage of a sweeping procedure on a sensitive pad over pressing/releasing action of conventional non-sensitive keys (e.g. keys of a conventional telephone keypad) is that when using the sweeping procedure, a user may lifts his finger from said sensitive surface only after finishing sweeping over the zones/keys corresponding to several (or all) of the letters of a word-part-of-a-word. Even if the user ends the speech of said portion before the end of the corresponding sweeping action, the system considers the entire corresponding

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sweeping action (e.g. from the time the user first touches a first zone/key of said surface till the time the user lifts his finger from said surface). Touching/sweeping and lifting the finger from said surface may also inform the system of the start point and endpoint of a corresponding speech (e.g. said speech is preferably approximately within said time limits.

In conclusion, according to one embodiment of the invention, a trajectory of a sweeping interaction (e.g. corresponding to the words having at least two characters) with a surface having a predefined number of zones/keys responding to said interaction may comprise the following points (e.g. trajectory points) wherein each of said points correspond to a letter of said word/part-of-a-word:

1) Starting point, corresponding to the first character of a word/part-of-a-word
2) Sweeping direction changing points (e.g. not obligatory, does not exist for the words having two characters only), usually corresponding to a middle character (if there exist any) of said word/part-of-a-word
3) Ending point corresponding to an additional character (preferably, the last (preferably, pronounceable)) of said word/part-of-a-word p271

Fig. 57 shows as an example, a trajectory 5705 of a sweeping action corresponding to the word "bring", on a surface 5700 having four zones/keys 5701-5704. The starting point 5706 informs the system that the first letter of said word is located on the zone/key 5703. The other three points/angles 5707-5709 corresponding to the change of direction and the end in the sweeping action, inform the system that said word comprises at least three more letters represented by the one of the characters assigned to the zones 5701, 5704, and 5702. Preferably, the order of said letters in said word (e.g. "bring, in this example) corresponds to the order of said trajectory points. It is understood that said angles

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corresponding to the change of direction may be less accentuated and have formed such as a curved form. Fig. 57a shows as an example, a sweeping trajectory (shown by the arrow 5714 having a curved angle 5715) corresponding to the word "time". In this example, the sweeping action has been provided according to the letters "t" (e.g. presented by the key/zone 5711), "i", (e.g. presented by the key/zone 5712), and "m" (e.g. presented by the key/zone 5713). It is understood that the user speaks said word (e.g. "time", in this example) while sweeping.

The tapping/pressing and/or sweeping data entry system of the invention will significantly reduce the ambiguity between a letter and the words starting with said letter and having a similar pronunciation. Based on the principles just described, for example, to enter the letter, "b", and the words/part-of-a-words, "be" and "bee", the following procedures may be considered:

- to enter the letter "b", as shown in fig. 58a, a user, as usual, may single press/touch (without sweeping) a sensitive-zone/key (e.g. the zone/key 5801 in this example) corresponding to the letter "b" while pronouncing said letter.
- to enter the word/part-of-a-word, "be", as shown in fig. 58b and described earlier, while pronouncing said word/part-of-a-word, a user may sweep on the sensitive surface 5810 starting from the zone 5811 corresponding to the letter "b" and passing/ending at the zone 5812, corresponding to the letter "e". The arrow 5813 demonstrates the corresponding sweeping path/trajectory.
- to enter the word/part-of-a-word "bee", as shown in fig. 58c and described earlier, while pronouncing said word/part-of-a-word, a user may sweep on the sensitive surface 5820 starting from the zone 5821 corresponding to the letter "b", passing/sweeping on the zone 5822, corresponding to the (e.g. first) letter "e", and changing sweeping direction on the same zone 5822, corresponding to the (e.g. second) letter "e". Having two trajectory points (e.g. middle and end point in this example) on a same zone/key may inform the system that at least two letters of said word/part-of-a-word are located-on/assigned-to said zone/key and are located after the letter corresponding to the previous zone/key in said word/part-of-a-word. The arrow 5823 demonstrates the corresponding sweeping path.

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It must be noted that, as shown, each change in sweeping direction may correspond to an additional corresponding letter in a word. While sweeping from one zone to another, there user may pass over a zone that he is not intending to. The system may not consider said passage if, for example, either the sweeping trajectory over said zone is not significant (e.g. see the sweeping path 5824 in the zone/key 5825 of the fig. 58c), and/or there has been no angles (e.g. no change of direction) in said zone, etc. Also to reduce and/or eliminate the confusability, a traversing (e.g. neutral) zone such as the zone 5826 may be considered.

As mentioned before, the character by character data entry system of the invention and the word/portion-of-a-word by word/portion-of-a-word data entry system of the invention may be combined. Also, sweeping and pressing embodiments of the invention may be combined. For example, to write a word such as "stop", a user may enter it in two portions "s" and "top". To enter the letter "s", the user may (single) touch/press, the zone/key corresponding to the letter "s" while pronouncing said letter. Then, to enter the portion "top", while pronouncing said portion, the user may sweep (e.g. drag), for example, his finger over the corresponding zones/keys according to principles of the sweeping procedure of the invention as described.

To reduce or eliminate the ambiguity of an accidental contact with a zone/key of a sensitive surface, in addition to touch sensitive feature another feature such as a click/heavier-pressure system (such as the system provided with the keys of a conventional mobile phone keypad) may be provided with each zone/key. In this case, for example, to enter a single symbol (e.g. according to the character by character data entry system of the invention) rather than a

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slight touching, the user may more strongly press a corresponding zone/key to enter said symbol. To proceed to the word/part-of-a-word by word/part-of-a-word data entry system of the invention, the user may use the sweeping procedures as described earlier, by sweeping, for example, his finger, slightly (e.g. using slight pressure) over the corresponding zones/keys.

If a word/part-of-a-word contains letters represented on a single zone/key, while speaking said word/part-of-a-word, a user may sweep, for example, his finger over said zone/key, in several consecutive different directions (e.g. at least one direction, and at most the number of directions equivalent to the number of letters (n) constituting said word/part-of-a-word, minus one (e.g., n-1 directions)). For example, to enter the word, "you", as shown in fig. 59a, in addition to speaking said word, a user may sweep his finger once (e.g. preferably, in a single straight/almost straight direction 5902) on the zone/key 5901 to inform the system that at least two letters of said word/part-of-a-word are assigned to said zone/key (according to one embodiment of the invention, entering a single character is represented by a tap over said zone/key). To enter the same word by providing more information to the system, as shown in fig. 59b, said user may sweep, for example, his finger, in two consecutive different directions 5912, 5913 (e.g. two straight/almost straight direction) on the zone/key 5911 corresponding to at least three letters (e.g. in this example, all of the letters constituting the word "you") of said a word/part-of-a-word, without removing (e.g. lifting) his finger from said zone/key (e.g. in this example, providing three trajectory points, 1 begin, 1 middle, 1 end).

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As mentioned, to enter a word/part-of-a-word, a user may speak said word/part-of-a-word and sweep an object such as his finger over at least part of the zones/keys representing the corresponding symbols (e.g. letters) of word/part-of-a-word. According to one embodiment of the invention, preferably, the user may sweep over the zone(s)/key(s) representing the first letter, at least one of the middle letters (e.g. if exist any), and the last letter of said word/part-of-a-word. Preferably, the last letter considered to be swap may be the last letter corresponding to the last pronounceable phoneme in a word/part-of-a-word. For example, the last letter to be swap of the word, "write", may be considered as the letter "t" (e.g. pronounceable) rather than the letter "e" (e.g. in this example, the letter "e" is not pronounced). It is understood that if desired, the user may sweep according to both letters "t" and "e".

According to another example, a user may sweep according to the first letter of a word/part-of-a-word and at least one of the remaining consonants of said word/part-of-a-word. For example, to enter the word "force", the user may sweep according to the letters "f", "r', and "c".

To enter a word in at least two portions, according to one embodiment of the invention, the user first sweeps (for example, by using his finger) on the zones/keys according to the first portion while speaking said portion. He then, may lift (e.g. remove) his finger from the sensitive surface to inform the system that the entry of said (e.g. in this example, first) potion has ended. The user then proceeds to entering the next portion (and so on) according to the same principles. At the end of the word, the user may provide an action such as pressing/touching a space key.

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To enter a word in at least two portions, according to another embodiment of the invention, the user first sweeps (for example, by using his finger) on the zones/keys according to the first portion while speaking it. He then, (without lifting/removing his finger from the sensitive surface) proceeds to entering the next portion (and so on) according to the same principles. At the end of the word, the user may lift (e.g. remove) his finger from the sensitive surface to inform the system that the entry of said whole word has ended. The user, then, may provide an action such as pressing/touching a space key. In this embodiment, as described, lifting the finger from the writing surface may correspond to the end of the entry of an entire word. Accordingly, a space character may automatically be provided before/after said word.

It is understood that, preferably, the order of sweeping zones/keys and, if necessary, different directions within said zones/keys may correspond to the order of the location of the corresponding letters in the corresponding word/part-of-a-word (e.g. from left to right, from right to left, from up to down, etc.). For example, while entering a word/portion-of-a-word in English language, a user may sweep on the zones/keys corresponding and/or according to the letters situated from left to right in said word/portion-of-a-word. In another example, while entering a word/portion-of-a-word in for example, Arabic or Hebrew language, a user may sweep on the zones/keys corresponding and/or according to the letters situated from right to left in said word/portion-of-a-word. As mentioned and demonstrated before, it is understood that a user may sweep zones (and direction) either according/corresponding to all of the letters of said

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word/portion-of-a-word or according/corresponding to some of the letters of said word/portion-of-a-word.

As mentioned before, part or all of the systems, methods, features, etc. described in this patent application and the patent application filed before by this inventor may be combined to provide different embodiments/products. For example, after entering a word portion by portion (e.g. by using the sweeping data entry of the invention), as described previously, to each entry of a portion, more than one related chain of letters may be selected by the system. In this case, as previously described, different assembly of said selections may be provided and compared to the words of a dictionary of words. If said assemblies correspond to more than one word of said dictionary then they may be presented to the user according to their frequency of use starting from the most frequent word to the least frequent word. This matter have been described in detail, previously.

The automatic spacing procedures of the invention may also be applied to the data entry systems using the sweeping methods of the invention.

As described before, different automatic spacing procedures may be considered and combined with the data entry systems of the invention. According to one embodiment of the invention (as described before) each word/portion-of-a-word may have special spacing characteristics such as the ones described hereunder:

- a portion-of-a-word may be of a kind to, preferably as default, be attached to the previous word/potion-of-a-word (Examples, "ing", "ment", "tion", etc).

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- a portion-of-a-word may be of a kind, to preferably, be attached to the previous word/potion-of-a-word and may also require the next word/portion-of-a-word to be attached to it (e.g. "ma" in the word "information")
- a portion-of-a-word may be an independently meaningful word that may not be attached to the previous word/potion-of-a-word As default, a space character before or after said word may automatically be provided, unless , for example, the user or the phrase context require it to be attached to said previous/next word/potion-of-a-word (e.g. "for", "less").
- single characters such as the letters, digits, punctuation marks, may be considered to be (e.g. as default) automatically attached to the previous/next word/potion-of-a-word, unless otherwise decided.

According to one embodiment of the invention, based on the character-by-character data entry systems of the invention, the entry of a single character such as a letter may be assigned to pressing/tapping a corresponding zone/key of a the touch-sensitive surface combined with/without speech, and a word/portion-of-a-word entry may be assigned to speaking said word/portion-of-a-word while providing a single-direction sweeping action (e.g. almost straight direction) on a zone/key to which the beginning character of said word is assigned. For example, to enter the letter "z", while pronouncing said letter, a user may press/touch (without sweeping) a key to which said letter "z" is assigned. To enter the word/portion-of-a-word "zoo", while pronouncing said word/portion-of-a-word, a user may sweep a zone/key to which said letter "z" (e.g. corresponding to the beginning letter of the word "zoo") is assigned. This may permit to the system to easily understand the user's intention of, either a character entry procedure or a word/portion-of-a-word entry procedure.

As described and/or shown, the data entry systems of the invention may provide many embodiments based on the principles described in patent applications filed by this inventor. Based on said principles and according to

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different embodiments of the invention, for examples, different keypads having different number of keys, and/or different key maps (e.g. different arrangement of symbols on a keypad) may be considered. An electronic device may comprise more than one of said embodiments which may require some of said different keypads and/or different key maps. To permit providing said keypads and/or key maps within a same electronic device, physical and/or virtual keypads and/or key maps may be provided.

According to one embodiment of the invention, different keypads and/or key maps according to a current embodiment of the invention on an electronic device, may automatically, be provided on the display unit of said electronic device. A user, according to, for example, the needs or his preference may select an embodiment from a group of different embodiment existing within said electronic device. For this, a means such as a mode (e.g.) may be provided within said electronic device which may be used by said user for selecting one of said embodiments and accordingly a corresponding keypads and/or key-map.

According to another embodiment, for example, instead of using the display unit of an electronic device for printing a keypad and/or a key-map, the keys of a keypad of said device (for example, if said electronic device is a telephone, the keys of its keypad) may be used to display different key maps on at lest some of the keys of said keypad. For this purpose, said keys of said keypad may comprise electronically modifiable printing keycaps (e.g. key surface).

Still, according to another embodiment and by referring to the previous embodiment, instead of using a keypad having electronically modifiable printing

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keycaps, different hard key maps according to corresponding data entry embodiments may be provided and delivered with said electronic device. Fig. 60, shows as an example, an exchangeable (e.g. front) cover 6000 of a mobile phone, having a number of hollow holes (e.g. such as the hole 6001) corresponding to a physical keycap (usually made in rubber material by the manufacturers of the mobile phones) . With said mobile phone and the exchangeable cover, also different replaceable hard (e.g. physical) key maps (e.g. such as the key maps 6011-6013) corresponding to the relating embodiments of the invention, may be provided. After selecting a desired embodiment of the date entry system, a user may, manually, replace a corresponding key map within said cover (and said phone).

It is understood that instead of a single pad having different predefined zones, different predefined pads, touch and/or press-sensitive-keys, etc., corresponding to each of said zones may be provided. Also fingers of a user may be used to assign said groups of symbols and said sweeping movements to said fingers combined with touch sensitive surface(s) or any other finger recognition systems (such as an optical scanning) as described in this application and the applications filed before. It must be noted that for example, any kind of technology and interaction such as two levels of pressure may be used instead of the sweeping data entry method of the invention, to provide the same results. Also any kind and number of objects such as keys may be used. These matters have already been described in this patent application, and previous patent applications filed by this inventor.

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According to one embodiment of the invention, instead of few keys and the manners of manipulation of said keys, the symbols and configuration of them (e.g. as described in different applications) may be assigned to other objects such as few fingers of a user and the user's manipulations of said fingers. Said fingers of said user may replace the keys of a keypad and said movements of said fingers may replace different modes such as single and/or double press, sweeping procedure, etc. Said fingers and said manipulations of said finger may be used with the user's behaviors such as voice and/or lip movements. Different recognition system for recognizing said objects (e.g. fingers, portions of fingers, fingerprint recognition systems, scanning systems, optical systems, etc.) and different recognition system for recognizing said behaviors (e.g. voice and/or lip recognition systems) may be used to provide the different embodiments of the invention as described before and may be described later.

According to one embodiment of the invention and by referring to the embodiment of the system using four keys for data entry, instead of four keys, four finger of a user may be used to assign the symbols which were assigned to said keys. Also, for example, a means such as an optically recognition system and/or a sensitive surface may be used for recognizing the interactions/movements of said fingers. For example, to enter the letter "to", a user may tap (e.g. single tap) one of his fingers to which the letter "t" is assigned on a surface while pronouncing said letter. Still based on the data entry systems of the invention, an additional recognition means such as a voice recognition system may be used for recognizing the user's speech and helping the system to provide an accurate output.

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Use of Multi-directional button or trackball, for word/part-of-a-word data entry

Instead of using a touch sensitive surface/pad having few predefined zones/keys combined with the sweeping procedure of the invention for entering words/part-of-a-words, other means such as a trackball, or a multi-directional button having few (e.g. four) predefined pressing zones/keys may be provided with the data entry system of the invention. The principles of such systems may be similar to the one described for said sweeping procedure, and other data entry systems of the invention.

According to one embodiment of the invention, a trackball having rotating movements which may be oriented toward a group of predefined points/zones around said trackball, and wherein to each of said predefined points/zones, a group of symbols according to the data entry systems of the invention may be assigned, may be used with the data entry system of the invention. As mentioned, the principles of said system may be similar to those described for the sweeping procedure using a touch sensitive surface/pad having few predefined zones/keys. The difference between the two systems is that, here, the trackball replaces said touch sensitive surface/pad, and the rotating movements of said trackball towards said predefined points/zones replace the sweeping/pressing action on said predefined zones/keys of said touch sensitive surface/pad. All of the descriptions of the data entry systems of the invention using the sweeping procedures on a touch sensitive surface/pad having few predefined zones/keys as described before, may be applied to said data entry system using said trackball. Fig. 61a, shows as

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example, a trackball system 6100, that may be rotated towards four predefined zones 6101-6104, wherein to each of said zones a predefined group of symbols such as alphanumerical characters, words, part-of-a-words, etc., according to different data entry systems of the invention as described in this application and the previous applications filed by this inventor, may be assigned and used with the principles of the pressing/sweeping combined with speaking/not-speaking data entry systems of the invention. For better interaction with said trackball, said zones and said symbols assigned to them may be printed on a display unit, and said trackball may manipulate a pointer on said display unit and said zones. According to another method, said trackball may position in a predefined position, before and after each usage. the center of said trackball may be marked by a point sign 6105. To enter a symbol a user may at first put his finger (e.g. thumb) on said point and the start moving in direction(s) according to a the symbol to be entered.

With continuous reference to the current embodiment, as shown in fig.61b, for example, in order to enter the word/part-of-a-word "ram", the user may rotate the trackball 6110 towards the zones 6111,6112, and 6113, corresponding to the characters, "r", "a", and "m", and preferably, simultaneously, speak the word/part-of-a-word, "ram".

According to another embodiment of the invention, a multi-directional button having few (e.g. four) predefined pressing zones/keys, and wherein to each of said zones/keys a group of symbols according to the data entry systems of the invention is assigned, may be used with the data entry system of the invention. Said multi-directional button may provide two type of information to the data entry system of the invention. A first information corresponding to a pressing

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action on said button, and a second information corresponding to the key/zone of said button wherein said pressing action is applied. A user may, either press on a single zone/key of said button corresponding to (e.g. first character of) said symbol, and speak/not-speak said symbol, or he may press on a zone/key of said button corresponding to a first character of said symbol, and sweep his finger on different zones/keys of said button (e.g. as described for sweeping embodiments, for providing more information about the characters constituting said symbol, when said symbols comprises more that one character) while continuously keeping said key in pressing position, and preferably, simultaneously, speak said symbol. At the end of the entry procedure of said symbol, the user may release said continuous pressing action on said key. As mentioned, the principles of this embodiment the invention may be similar to those described for the sweeping procedure using a touch sensitive surface/pad having few predefined zones/keys. The difference between the two systems is that, here, the multi-directional button replaces said touch sensitive surface/pad, and single/continuous pressing actions on said predefined zones/keys of said multi-directional button replace the sweeping/pressing actions of said predefined zones/keys of said sensitive surface/pad. All of the descriptions of the data entry system of the invention using the sweeping procedures on a touch sensitive surface/pad having few predefined zones/keys as described before, may be applied to the current data entry system of the invention using said multi-directional button. Fig. 61c, shows as an example, a multi-directional button 6120, as described here, wherein said button comprises four predefined zones/keys 6121-6124, wherein to each of said zones/keys a predefined group of symbols such as alphanumerical characters, words, part-of-a-

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words, etc., according to different data entry systems of the invention (as described in this application and the previous applications filed by this inventor) may be assigned and used with the principles of the press and speak data entry system of the invention.

A Computing/Communication Device Having Multiple User-Interfaces

According to one embodiment of the invention, a computing communication device such as the one described earlier in this application and shown as example in several drawings such as Figs 47a-47i, may comprise a keypad in one side of it, for at least dialing phone numbers. Said keypad may be a standard telephone-type keypad. Fig 62a shows a mobile communication device 6200 comprising a data/text entry system of the invention using few keys (here, arranged in two rows 6201-6202), as described before, along with a relating display unit 6203. In order to, discretely, dial a number, a telephone-type keypad located at another side of said device may be considered. Fig. 62b shows the backside of said device 6200 wherein a telephone-type keypad 6211 is integrated within said backside of said device. A user may use the keypad 6211 to for example, conventionally, dial a number, or provide other telephone functionalities such as selecting menus. Other telephone function keys such as send/end keys 6212-6213, may also be provided at said side. A display unit 6214, disposed separately from the display unit of said data/text entry system, may also be provided at this side to print the telephony operations such as dialing or receiving numbers. A pointing device 6215 being related to the data/text entry system of the invention implemented within said device (as described earlier), may also be integrated at this side. As previously described in this and prior patent

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applications filed by this inventor, the (clicking) key(s) relating to said pointing device may be located at another side such as the opposite side of said electronic device relating to said pointing device.

A Computing/Communication Device Equipped With Handwriting Data Entry System

According to one embodiment of the invention, in addition to the data entry system of the invention, a computing and/or communication device of the invention may comprise a handwriting recognition system for at least dialing a telephone number. Said handwriting system may be of any kind such as a handwriting system based on the recognition of the sounds/vibrations of a writing tip of a device on a writing surface. This matter has been described in detail in a PCT application titled "Stylus Computer", which has been filed on December 26th, 2001. A data entry based on a handwriting recognition system is slow. On the other hand said data entry is discrete. A handwriting recognition system may, preferably, be used for short discrete data entry tasks in devices comprising the press and speak data entry system of the invention. Fig. 63a shows a computing and or communication device 6300 such as the one described earlier and shown as example in several drawings such as Figs 47a-47i. In this example, said device uses six keys 6301-6306 wherein, as described earlier, to four of said keys 6302- 6305 (2 at each end), at least the alphabetical (also, eventually the numerical) characters of a language may be assigned. The two other keys 6301 and 6306, may comprise other symbols such as, at least, some of the punctuation marks, and/or functions (e.g. for editing a text).

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As described before, the data entry system of the invention using few keys is a very quick and accurate system. In some conditions, generally, when requiring a short effort such as dialing a telephone number, a user may prefer to use a discrete data entry system. Usually, a handwriting data entry system requires a touch-sensitive surface (e.g. display/pad) not being very small. It also requires a pen for writing on said surface. The handwriting data entry and recognition system invented by this inventor, generally, does not require said sensitive surface and said pen. It may be implemented within any device, and may be non-replaceable by other handwriting recognition systems in devices having a small size.

With continuous reference to Fig. 63a, the handwriting recognition system invented by this inventor, may be implemented within said device 6300. For this purpose, a writing tip 6307 may be provided at, for example, one end of said device. Other features such as at least a microphone, as required by said handwriting recognition system, may be implemented within said device 6300. It is understood that other handwriting recognition systems such as a system based on the optical sensors or using accelometers may be used with said device. A user, at his/her convenience, may use said data entry systems, separately and/or combined with each other. For example, said user may dial a number by using the handwriting data entry system, only. On the other hand, said user may write a text by using the press and speak data entry system of the invention. Said systems may also be combined during a data entry such as writing a text. For example, during writing a text, a user may write part of said text by using the press and speak data entry systems of the invention and switch to a handwriting data entry system (e.g. such as said handwriting system using writing sounds/vibrations, as invented by this inventor).

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The user may switch from one data entry system to another by, either, writing with the pen tip on a surface, or speaking/not-speaking and pressing corresponding keys.

As mentioned previously, it is understood that different key arrangements and different configurations of symbols assigned to said keys may be considered with the different embodiments based on the press and speak/not-speak data entry systems of the invention. Fig. 63b, shows as an example, according to another embodiment of the invention, a device 6310 resembling to the device 6300 of the fig. 63a, with the difference that, here, the data entry system of the inventions may use four keys at each side 6311, 6312 (one additional key at each side, wherein to each of said additional keys a group of symbols such as punctuation mark characters and/or functions may be assigned). Having additional keys may help to consider more symbols within the data entry system of the invention. It also may help to provide better input accuracy by assigning some of the symbols assigned to other keys, to said additional keys, resulting to assign less symbols to the keys used with the system.

According to another embodiment of the invention, for easily distinguishing between a character by character data entry system of the invention, and a word/part-of-a-word data entry system of the invention, the alphabetical characters may be assigned to a group of keys different from another group of keys to which the words/part-of-a-words are assigned. This may significantly enhance the accuracy of the data entry. Fig. 63c, shows as an example, a device 6320 resembling to the device 6310 of the fig. 63b, having two sets of four keys (2x2) at each side. In this example, the keys 6321-6324 may, accordingly, correspond to alphabetical characters printed on said keys, and the keys 6325-6328 may, accordingly, correspond to words/part-of-a-words starting with the characters printed on said

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keys. For example, for entering a single letter such as the letter "t", a user may press the key 6321 and speak said letter. Also for example, for entering a part-of-a-word "til", a user may press the key 6325 and speak said part-of-a-word.

It is understood that, as described and shown previously, said keys in their arrangement, may be separately disposed from said electronic device, for example, within one or more keypads wherein said keypads may, wirelessly or by wires, be connected to said electronic device. Also as mentioned and will be mentioned in different paragraphs, in any embodiment of this invention, said few number of keys, their arrangement on a device, said assignment of symbols to said key and to an interaction with said keys, said device itself, etc., are shown only as examples. Obviously, other varieties may be considered by the people skilled in the art.

It must be noted, that, as shown in the figs. 63a-63c, and the figs. 47b-47d, according to one embodiment of the invention, the data entry system of the invention may have the shape of a stylus. Also, as mentioned before, a stylus shaped computer/communication device and its features have been invented and described in a PCT application titled "Stylus Computer", which has been filed on December 26th, 2001. The stylus-shaped device of this invention may comprise some, or all, of the features and applications of said "Stylus Computer" PCT patent application. For example, the stylus-shaped device of this invention may be a cylinder-shaped device, having a display unit covering its surface. Also, for example, the stylus-shaped device of this invention may comprise a point and clicking device and a handwriting recognition system similar to that of said "stylus computer" PCT.

According to on e embodiment of the invention, the stylus-shaped device of this invention, may comprise attachment means to attach said device to a user, by

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attaching it, for example, to its cloth or it's ear. Fig. 63d shows as an example, the backside of an electronic device such as the device 6300 of the fig. 63a. As shown, an attachment means, 6331 may be provided within said device for attaching it to, for example, a user's pocket or a user's ear. Also a speaker 6332 may be provided within said attachment means for providing said speaker closed to the cavity of said user's ear. Also a pointing unit 6333 such as the ones proposed by this inventor may be provided within said device.

With continuous reference to the current embodiment, as shown in fig. 63e, as an example, said device 6340 may also be attached to a user's ear to permit hands-free conversation, while, for example, said user is walking or driving. The stylus-shaped of said device 6340 and the locations of said microphone 6341 and said speaker 6342 within said device and its attachment means 6343, respectivly, may permit to said microphone and said speaker, to be near the user's mouse and ear, respectively. It is understood that said microphone, speaker, or attachment means may be located in any other locations within said device.

A standalone-data entry unit of the invention having few keys, to comprise a display unit

According to one embodiment of the invention, a standalone data entry unit of the invention having at least few keys, as described and shown in figs 55a-55j, may comprise a display unit and be connected to a corresponding electronic device. Fig. 64a shows as an example, a standalone data entry unit 6400 based on the principles described earlier which comprises a display unit 6401. The advantage of

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having a display within said unit (specially, when said unit is carried as a pendent) is that, for example, a user may, insert said electronic device (e.g. a mobile phone), in for example, his pocket, and use said data entry unit for entering/ receiving data via said device. By being connected to said device, a user may see the data that he enters (e.g. a sending SMS) or receives (e.g. an incoming SMS), by seeing it on the display unit of said data entry unit. It is understood that said display unit may be of any kind and may be disposed within said unit according to different systems. For example, as shown in Fig. 64b, a display unit 6411 of a standalone data entry unit of the invention 6410 may be disposed within an interior side of a cover 6412 of said data entry unit. It is understood that a standalone data entry unit of the invention may comprise some, or all of the features (e.g. such as an embedded microphone), as described earlier in the corresponding embodiments.

As described earlier, the data entry system of the invention using few keys may be implemented within any device such as a PDA or a Tablet PC,. Fig. 65a shows as an example, an electronic device such as a Tablet PC device 6500 comprising the data entry system of the invention using few key. A key arrangement and symbol assignment based on the principles of the data entry systems of the invention may have been provided within said device. In this example, said tablet PC 6500 may comprise four keys 6501-6504 to which, at least, the alphabetical and eventually the numerical characters of a language may be assigned. In addition to said four keys, said device may comprise additional keys such as the keys 6505-6506, to which, for example, symbols such as, at least, punctuation marks and functions may be assigned. It is understood that instead of physical keys (e.g. 6501-6506), virtual (e.g. soft) keys may be defined on a display unit of said Tablet PC,

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and used with the data entry system. The data entry system of the invention, the key arrangements, and the assignment of symbols to said keys has already been described in detail. Same keys, or additional keys provided within said device, may be used in combination with a pointing device being integrated, for example, within the backside of said device. This matter has already been described in detail in different patent applications filed by this inventor. Said Tablet PC may comprise other keys 6507 for other purposes such as on/off functions, etc. Fig. 65b shows as an example, the backside of the tablet PC 6500 of the fig. 65a. As shown, for better stability during, for example, a data entry, said tablet PC may comprise one or more handling means 6511-6512 to be used by a user while for example, entering data. It is understood that said handles may be of any kind and may be placed at any location (e.g. at different sides) within said device. As mentioned before, said device may comprise a at least a pointing and clicking system, wherein at least one pointing unit 6513 of said system may be located within the backside of said device. As described before, the keys corresponding to said pointing may be located on the front side of said TabletPC (at a convenient location) to permit easy manipulation of said point and clicking device (with a left or right hand, as desired). According to one design, said Tablet PC may comprise two of said point and clicking devices, locating at a left and right side, respectively, of said Tablet PC and the elements of said pointing and clicking devices may work in conjunction with each other. It is understood that any kind of microphone such as a built-in microphone or a separate wired/wireless microphone may be used to perceive the user's speech during the data entry. These matters have already been described in detail. Also a standalone data entry unit of the invention may be used with said electronic device.

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Also, the data entry system of the invention using few keys may be used in many environments such as automotive, simulation, or gaming environments. According to one embodiment of the invention, the keys of said system may be positioned within a vehicle such as a car. Fig. 65c shows a steering wheel 6520 of a vehicle comprising few keys, (in this example, arranged on opposite sides 6521-6522 on said steering wheel 6520) which are used with a data entry system of the invention. The data entry system of the invention, the key arrangements, and the assignment of symbols to said keys has already been described in detail. As shown here, a user may enter data such as text while driving. For this purpose, while holding said steering wheel 6520 with his hands, for example, during driving, a driver may use the press and speak data entry system of the invention by pressing said keys and speaking/not-speaking accordingly. It is understood that any kind of microphone such as a built-in microphone or a wired/wireless microphone such as a Bluetooth microphone may be used to perceive the user's speech during the data entry. Also any key arrangement and symbol assignment to said keys may be considered in any location within any kind of vehicle such as an aircraft.

As mentioned before, the great advantage of the data entry system of the invention, in general, and the data entry system of the invention using few keys, in particular (e.g. wherein the alphabetical and eventually the numerical characters are assigned to four keys arranged in two pairs of adjacent keys, and wherein a user may position each of his two thumbs on each of said pair of keys to press one of said keys), is in that a user may provide a quick and accurate data entry without the necessity of looking (frequently) at neither the keys, nor at the display unit.

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It is understood that in the environments (e.g. darkness) and situations (e.g. while driving) that looking at a corresponding display for input verification is not possible/permitted, an informing system may be used to inform the user of one or more last symbols/phrases that were entered. Said system may be a text-to-speech TTS system wherein the system speaks said symbols as they were recognized by the data entry system of the invention. The user may be required to confirm said recognized symbols, by for example, not providing any action. Also for example, if the recognized symbol is an erroneous symbol, the user may provide a predefined action such as using a delete key for erasing said symbol. He then may repeat the entry of said symbol.

Networking Implementation

As mentioned in the previously filed patent applications relating to the data entry systems of the invention, the data entry system of the invention may be implemented within a networking system such as a local area networking system comprising client terminals connected to a server/main-computer. According to one embodiment of the invention, in said networking system, said terminals, generally, may be, either small devices with no processing capabilities, or devices with at most limited processing capabilities. In contrast, the server computer may have powerful processing capabilities. In this case the server computer may process information transmitted to it by a terminal of said networking system. By using a terminal, a user, may, according to the principles of the data entry system of the invention, input information (e.g. key press, speech) concerning the entry of a symbol to said server.

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After processing said information and recognizing a corresponding symbol, the server computer may transmit the result to the display unit of said terminal. It is understood that said terminal may comprise all of the features of the data entry systems of the invention (e.g. such as key arrangements, symbols assigned to said keys, at least a microphone, a camera, etc.), necessary for inputting and transmitting said information to said server computes. Fig. 66 shows as an example, terminals/data entry units 6601-6606 connected to a central server/computer 6600, wherein the results of part of different data/text entered by different data entry units/terminals are printed on the corresponding displays.

The above-mentioned embodiment may be used in many environments such as in an airline aircraft. In the recent passenger aircrafts, each passenger seat comprises a remote control unit having limited number of keys which is connected to a display unit usually installed in front of said seat (e.g. usually situated at the backside of the front seat). Said remote controls may be combined with a built-in or separate microphone, and may be connected to a server/main computer in said aircraft. Instead of said remote control, other personal computing or data entry devices may be used by connecting them to said server/main computer (e.g. via a USB port installed within said seat). As mentioned, said device may, for example, be a data entry unit of the invention, a PDA, a mobile phone, or even a notebook, etc. This may become the most attractive entertainment service supplied by airlines to their passenger during a flight. Passengers may edit letters, send messages, use the internet, or chat with other passengers in said aircraft. A similar system may be implemented within a networking system of organizations, or businesses (e.g. the point-of-sales of chain stores), wherein data entry units comprising necessary

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features (e.g. keys, microphone) for inputting data/text based on the data entry systems of the invention, may be used in connection with a server computer. The above-mentioned data/text entry system of the invention permits a quick and accurate data entry system through terminal equipments, generally, with no processing capabilities, or, having limited processing capabilities.

The data entry system of the invention using few keys (e.g. including four keys, wherein at least the alphabetical characters are assigned to said keys), may be useful in many circumstances. As mentioned before, instead of using keys, a user may use, for example, his face/head/eyes movements combined with his voice for a data/text entry based on the principles of the data entry systems of the invention. According to one embodiment of the invention, for this purpose, instead of being assigned to few key, symbols (e.g. at least, substantially, all of the alphabetical characters of a language) as described in this application and previous applications, may be assigned to the movements of, for example, a user's head in, for example, four directions (e.g. left, right, forward, backward). The symbol configuration assignments may be the same as described for the keys. For example, if the letters "Q", "W", "E", "R", "T", and "Y", are assigned to the movement of the user's head to the left, for entering the letter "t", a user may move his head to the left and say "T". Same principles may be assigned to the movements of a use's eye (e.g. left, right, up, down). By referring to the last mentioned example, for entering the letter "T", a user may move his eye to the left and say "T". The head, eye, face, etc., movements may be detected by means such as a camera or sensors provided on the user's body.

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The above-mentioned embodiments, which do not use keys, may be useful for data entry by people having limited motor-capabilities. For example, a blind person, may use the movements of his/her head combined with his voice, and a person who is not be able to use his fingers for pressing keys, may use his eye/head movements combined with his voice .

According to another embodiment of the invention, as mentioned before, instead of assigning the symbols to few keys, said symbols may be assigned to the movements of a user's fingers. As an example, Fig. 67, shows a user's hands 6700 wherein to four fingers 6701-6704 (e.g. two fingers in each hand) of said user's hands a configuration of symbols based on the configuration of symbols assigned to few key of the invention, may be assigned. For example, to a predefined movement or gesture of the finger 6701, the letters "Q", "W", "E", "R", "T", and "Y", (or words/part-of-a-words, starting with said letters), may be assigned. As an example, said movement may be moving said finger downward. Also, for example, for entering the letter "T", a user may move the finger 6701 downward, and, preferably, simultaneously, say "T". It is understood that any configuration of symbols may be considered and assigned to any number of a user's finger, based on the principles of the data entry systems of the invention as described in this application and the applications filed before.

With the continuous description of the above-mentioned embodiment, many systems may be considered for detecting the movements/gestures of said user's fingers. For example, the movements of a user's finger may be detected by a position of said finger relative to another finger. According to one method, as shown in fig. 67, sensors 6705-6706 (e.g., here, in form of rings) may be provided with the

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fingers 6701-6702, used for data entry. According to one embodiment, a movement of a user's finger may be recognized based on for example, vibrations perceived by said sensors based on the friction of said adjacent rings 6705-6706 (e.g. it is understood that the surface of said rings may be such that the friction vibrations of a downward movement and an upward movement of said finger, may be different).

According to another method, sensors 6707, 6708, may be mounted-on ring-type means (or other means mounted on a user's fingers), and wherein positions of said sensors relating to each other, may define the movement of a finger.

It is understood that finger movement/gesture detecting means, described here, are only described as examples. Other detecting means such as optical detecting means may be considered.

Word Categories

According to one embodiment of the invention, the word/part-of-a-word level data entry system of the invention may be used in predefined environments, such as a medical or a juridical environment. In this case, instead of using a large database of words/part-of-a-words with said system, limited database of words/part-of-a-words relating to said environment may be considered. This will significantly augment the accuracy and speed of the system. Out-of-said-database words/part-of-a-words may be entered, character by character.

A mode key for temporary character by character data entry

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According to one embodiment of the invention, in the data entry system of the invention combining character by character data/text entry and word/part-of-a-word data entry, a predefined key may be used to inform the system that, temporarily, a user is entering single characters. For example, during a text entry, a user, may enter a portion of a text according to principles of the word/part-of-a-word data entry system of the invention, by not pressing said predefined key. The system, in this case, may not consider the letters assigned to the keys that said user presses. The system, may only consider the words/part-of-a-words assigned to said key presses. If said predefined key is pressed for example, simultaneously with other key presses relating to said text entry, then the system may only considers the single letters assigned to said key presses, and ignores the word/part-of-a-word data entry assigned to said key presses.

Phrase entry

According to another embodiment of the invention, as mentioned before, the data entry system of the invention may comprise a phrases-level text entry system. For example, after entering a whole phrase, by for example, using the data entry system of the invention combining character by character data/text entry and/or word/part-of-a-word data entry system of the invention, the system may analyze the recognized words of said phrase, and based on the linguistically characteristics/models of said language and/or the sense of said phrase, the system may correct, add, or replace some of the words of said phrase to provide an error-free phrase. For example, if a user enters the phrase "let's meet at noon", and the recognized words are "lets meet at noon", by analyzing said phrase, the system may

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replace the word "lets", by the word "let's" and provide the phrase "let's meet at noon". The advantage of this embodiment is that because the data entry system of the invention is a highly accurate system, the user may not have to worry about correcting few errors occurred during the entry of a phrase. The system may, automatically, correct said errors. It is understood that some symbols such as ".", or a return command, provided at the end of a phrase, may inform the system about the ending point of said phrase.

Phrase Entry

According to one embodiment of the invention, a symbol assigned to an object such as a key, may represent a phrase. For example, a group of words (e.g. "Best regards") may be assigned to a key (e.g. preferably, the key representing also the letter "b"). A user may press said key and provide a speech such as speaking said phrase or part of said phrase (e.g. saying "best regards" in this example), to enter said phrase.

Different modes, to single characters, and to words/part-of-a-words

As previously mentioned, the data entry system of the invention may use different modes (e.g. different interactions with an object such as a key) wherein to each of said modes a predefined group of symbols, assigned to the object, may be assigned. Also as mentioned, for example, said modes may be a short/single

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pressing action on a key, a long pressing action on a key, a double pressing action on a key, short/long/double gesture with a finger/eye etc.

According to one embodiment of the invention, single characters, words, part-of-a-words, phrases, etc. comprising more than character, or phrases, may be assigned to different modes. For example, single characters such as letters may be assigned to a single/short pressing action on a key, while words/part-of-a-words comprising at least two characters may be assigned to a double pressing action or a longer pressing action on a key (e.g. the same key or another key,), or vise versa (e.g. also for example, words/part-of-a-words comprising at least two characters may be assigned to a single pressing action on a different key) . Also for example, as mentioned before, part of the words/part-of-a-words causing ambiguity to the speech (e.g. voice, lip) recognition system may be assigned to a double pressing action on a key. Also different single characters, words, etc., may be assigned to slight, heavy, or double pressing actions on a key. Also for example, words/portions-of-words which do not provide ambiguity with single letters assigned to a mode of interaction with a key may be assigned to said mode of interaction with said key. Different modes of interactions have already been described earlier in this application and in other patent applications filed by this inventor.

It is understood that different predefined laps of time/pressure levels may be considered to define a pressing action/mode. For example, a short time pressing (e.g. up to 0.20 second) action on a key may be considered as a short pressing action (to which a first group of symbols may be assigned), a longer time pressing action (e.g. greater than 0.20 to 0.40 second) may be considered as

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a long pressing action (to which a second group of symbols may be assigned), and a still longer pressing action (e.g. greater than 0.40 second) may be considered as another mode to which the repeating procedure (e.g. described before) may be assigned. For example, to input the letter "a", a user may short-press a key (wherein the letter "a" is assigned to said key and said interaction with said key), and say "a". He may longer-press said key and say "a" to, for example, get the word/part-of-a-word "ai" (e.g. wherein the word/part-of-a-word "ai" is assigned to said key and said interaction with said key). The user may press said key and say "a", and keep said key in pressing position as much as needed (e.g. still longer period of time) to input, repeatedly, the letter "a". The letter "a" will be repeated until the user releases (stops said pressing action on) said key.

As mentioned before, words comprising a space character (e.g. before/after said word) may be assigned to a mode of interaction of the invention with an object such as a key. According to one embodiment of the invention, said mode of interaction with a key may be said longer/heavy pressing action of said key as just described.

As mentioned before, any combination of objects, modes of interaction, groups of characters, etc., may be considered and used with the data entry systems of the invention.

Backspace

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A backspace procedure erasing the word/part of the word already entered, have been described before in this application. According to different embodiments, at least one kind of backspace procedure may be assigned to at least one mode of interaction. For example, a backspace key may be provided wherein by pressing said key, at least one desired utterance, word/part-of-a-word, phrase, etc. may be erased. For example, each single-pressing action on said key may erase an output corresponding to a single utterance before a cursor situated after said output. For example, if a user has entered the words/parts-of-a-word "call", and "ing", according to one procedure, he, for example, may erase the last utterance "ing", by single-pressing said key one time. Another single-pressing action on said key may erase the output "call", corresponding to another utterance. According to predefined procedure, for example, a single/double-pressing action on said key may erase the whole word "calling". Thus based on the principles of backspace procedure of the invention, obviously, many predefined erasing procedures may be considered by the people skill in the art.

Miniaturized keyboards

Miniaturized keyboards are used with small/mobile electronic devices. The major inconvenience of use of said keyboards is that because the keys are small and closed to each other pressing a key with a user's finger may cause mispressing said key. That's why, in PDAs, usually, said keyboards are pressed with a pen. The data entry system of the invention may eliminate said shortcoming. The data entry system of the invention may use a PC-type

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miniaturized/virtual keyboard. By targeting a key for pressing it, even if a user misspresses said key (by for example, pressing a neighboring key), according to one embodiment of the invention and based on the principles of the date entry system of the invention, the user may speak a speech corresponding to said key. If the speech of the user does not correspond to the key being pressed, then the system may suggest that the said key was mistakenly pressed. the system, then, may consider that neighboring keys and correspond said speech to one of said keys. By using this embodiment, miniaturized keyboards may easily be used with normal user fingers, easing and speeding up the data entry through those keyboards. It is understood that all of the features and systems based on the principles of the data entry systems of the invention may be considered and used with such keyboerd. For example, the word/part-of-the-word data entry system of the invention may also be used with this embodiment.

Also, as mentioned and demonstrated through different embodiments, a principle of the data entry system of the invention, is to select (e.g candidate) a predefined smaller number of symbols among a larger number of symbols by assigning said smaller number of symbols to a predefined interaction with a predefined object, and selecting a symbol among said smaller number of symbols by using/not-using a speech corresponding to said symbol.

Also as mentioned, said object and said interaction with said object may be of any kind. As described before, for example, said object may be parts of a user's body (such as fingers, eyes, etc.), and said predefined interaction may be moving said object to different predefined directions such as left, right, up, down, etc.

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According to one embodiment of the invention, said object may be an electronic device and said interaction with said object may be tilting said electronic device in predefined directions. For example, each of said different smaller groups of symbols containing part of the symbols of a larger group of symbols such as letters, punctuation marks, words/part-of-a-words, functions, etc. (as described before) of a language, may be assigned to a predefined tilting/action direction applied to said electronic device. Then still based on principles of the data entry system of the invention (as described before), one of said symbols of said smaller group of symbols may be selected by providing/not providing a speech corresponding to said symbol. Fig.68 shows, as an example, an electronic device such as a mobile phone 6800. As an example, four groups of symbols 6801-6804 may be assigned to four tilting directions (e.g. left, up, right, down) 6805-6808 being applied to said device. Still as an example, to enter the letter "t", a user may tilt the device to the right and pronounce a speech corresponding to said letter (e.g. saying said letter). One of the advantages of the tilting system of the invention is that the system may not use any key and may use one hand for data entry. It also permits to provide a large display within the device. Fig 68a shows an electronic device 6810 using the tilting data entry system of the invention, and wherein a large display 6811 substantially covers the surface of at least one side of said electronic device. It is understood a mode such as a single/double pressing action on a key, here may be replaced by a single/double tilting direction/action applied to the device.

Treatment of apostrophe

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According to one embodiment of the invention, predefined words comprising an apostrophe may be created and assigned to one or more keys and be entered. For example, words such as "it's", "we're", "he'll", "they've", "isn't", etc., may be assigned to at least one predefined key. Each of said words may be entered by pressing a corresponding key and speaking said word.

According to another embodiment of the invention, for the same purpose, (e.g. abbreviated) words such as " 's ", " 'll ", " 've ", " n't ", etc., may be created and assigned to one or more keys. Said words may be pronounced by their original pronunciations. For example:

" 's " may be pronounced " s/is/has ";
" 're " may be pronounced " are";
" 've" may be pronounced " have";
" n't " may be pronounced " not";etc.

Said words may be entered to, for example, being attached to the end of a previous word/character already entered. For example, to enter the word "they've", a user may enter two separate words "they" and " 've " (e.g, entering according to the data entry systems of the invention) without providing an space between them. As mentioned, the speech assigned to a word comprising an apostrophe (e.g. an abbreviated word such as "n't" of the word "not") may be the same as the original word. For example, words "n't" and "not", both, may be pronounced "not". In this case each of said words may be assigned to a different mode of interaction with a same key, or each of them may be assigned to a different key. For example, the user may single-press a corresponding key (e.g. a predefined interaction with said key to which the word "not" is assigned) and say

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"not" to enter the word "not". To enter the word "n't", the user may, for example, double-press the same key (e.g. a predefined interaction with said key to which the word "n't" is assigned) and say "not". According to another embodiment of the invention, part/all of the words comprising an apostrophe may be assigned to the key that the apostrophe punctuation mark itself is assigned.

According to one embodiment of the invention, a part-of-a-word such as " 's" , " 'd" , etc., comprising an apostrophe may be assigned to a key and a mode of interaction with said key and be pronounced as a corresponding letter such as "s", "d", etc. Said key or said mode of interaction may be different than that assigned to said corresponding letter to avoid ambiguity.

Configuration of letters on four keys

As mentioned previously, to augment the accuracy of the speech recognition system, symbols having closed pronunciations (e.g. causing ambiguity to the speech recognition for selecting one of them) may be assigned to different keys. Fig. 69 shows another example of assignment of alphabetical characters to four keys 6901-6904 of a keypad 6900. Although, they may be assigned to any key, words/part-of-a-words comprising more that one character, preferably, may be assigned to the keys representing the first character of said words and/or said part-of-a-words. The arrangement of characters of this example not only eliminates the ambiguity of character by character text entry system of the invention using four keys comprising letters, but it also

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significantly reduces the ambiguity of the word/part-of-a-word data entry system of the invention. For example, letter "n", and words/part-of-a-words starting with "n" may be assigned to the key 6903, while the letter "i" and words/part-of-a-words starting with "n" may be assigned to the key 6901. This is because, for example, the word "in"(assigned to the key 6901), and the letter "n" (assigned to the key 6903) may have, ambiguously, substantially similar pronunciations. Obviously, as mentioned before, other configuration of symbols on the keys or any other number and arrangement of keys based on principles just described may be considered by the people skilled in the art.

Also, as mentioned earlier, according to another example, if the speech of two symbols have substantially similar pronunciations and said symbols are assigned to a same key and are inputted by a same kind of interaction (e.g. combined with the corresponding speech) with the key, to avoid ambiguity, to at least a first symbol of the symbols another speech having non-substantially similar pronunciation with the second symbol may be assigned. For example, if two symbols such a "I" and "hi" (e.g. respectively, a letter and a word, having substantially similar pronunciations), are assigned to a key and are inputted, by for example, a single pressing action with the key while speaking them, to avoid the ambiguity, for example, another speech such as "hey" (which is substantially differently pronounced than "i"), may be assigned to the symbol (e.g. word) "hi."

Fast typing

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One of the advantages of assignment of at least alphabetical characters to only four keys as shown previously and here in fig. 69a, is that a user may lay each of two of his fingers (e.g. left, and right thumbs) 6915, 6916 on a corresponding column of two keys (e.g. two keys 6911-6912, and two keys 6913-6914, in this example) so that said finger, simultaneously, touches said two keys. This permits to not remove (or rarely remove) the fingers from the keys during text entry and therefore a user knows which key to press without looking at the keypad. This permits fast typing even while said user is in motion. It is understood that for this purpose, the size of the keys, the distance between them, and other parameters such as physical characteristics of said keys, may be such that to optimize the above-mentioned procedure.

As mentioned before, it is understood that according to needs, other configurations of keys may be considered. For example, said four keys may be configured in a manner that, when a user uses a single finger to enter said text, his finger may, preferably, be capable to simultaneously touch said four keys. Also different predefined number of keys to which said at least alphabetical characters are assigned, may be considered according to different needs.

As mentioned before and demonstrated in drawings such as fig. 52, multi-directional keys may be used for the data entry system of the invention. Also, as mentioned, different number of keys, different types/configuration of keys may be considered to be used with the data entry system of the invention. Still as mentioned, alphabetical-letters or text-characters of a language may be assigned to, for example, four keys used with the data entry system of the invention. Fig. 69b shows as an example, an electronic device 6920 having two

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multidirectional (e.g. four directional, in this example) keys 6927-6928 wherein to four of their sub-keys 6921-6924, alphabetical characters of a language are assigned. An arrangement and use of four keys on two sides of an electronic device for data (e.g. text) entry has been described before and been shown by exemplary drawings such as fig.63b.

A device having an extendable flexible display unit

As described before, according to one embodiment of the invention, a device comprising a flexible display such as an OLED display and the data entry system of the invention and its features may be provided. Figure70a shows as an example a flexible display unit 7000. Said display unit may be retracted by for example, rolling it at, at least, one of its sides 7001. Said display may be extended by unrolling it. Fig. 70b shows an electronic device such as a computer/communication unit 7010 comprising a flexible display unit 7011. Said electronic device also may comprise the data entry system of the invention and a key arrangement of the invention. In this example, said device comprises two sections 7018-7019, on which said keys 7012-7013 are disposed. The components of said device may be implemented on at least one of said sections 7018, 7019 of said device 7010. Said two sections may be connected to each others by wires or wirelessly. Also, at least part of said display unit may be disposed (e.g. rolled) in at least one of said two sections 7018-7019 of said device. Said two sections of said device may be extended and retracted relative to each other at a predefined distance or at any distance desired by a user (e.g.

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the maximum distance may be a function of the maximum length of said display unit). In this examples, said two sections are, for example, in a moderate distance relative to each other. By extending said two sections relative to each other said display unit may also be extended (e.g. by unrolling). A user may keep each of said two sections 7018-7019 in each of his hands and use the keys 7012-7013 of each of said sections with a corresponding hand for entering data by, for example, the data entry system of the invention, into said device 7010 and said display unit 7011of said device. Fig. 70c, shows, said device 7010 and said display unit 7011 in a more extended position. A means such as at least a button may be used to release, and/or fix, and/or retract said sections relative to each other. These functions may be automatically provided by means such as a button and/or a spring. Said functions are known by people skilled in the art. Fig. 70d shows said device 7010 in a closed position. As mentioned, said device may be a communication device. In this example, said device may be used as a phone unit. For this purpose, a microphone 7031, and a speaker 7032 may be disposed within said device, (preferably at its two ends) so that the distance between said microphone and said speaker correspond to a user's mouth and ear. Because said display is a flexible display, it may be fragile. As shown in fig. 70e, to protect said display of said device in extended position, said device 7010 may comprise multi-sectioned, for example, substantially rigid elements 7041also extending and retracting relative to each other while extending and retracting said two sections of said device, so that, in extended position said sections provide a flat surface wherein said display (not shown) may be lying on said surface. It is understood that said elements may be of ant kind and comprise any form and any

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retracting/extending system. Also, said display unit may be retracted/extended by different methods such as folding/unfolding or sliding/unsliding methods.

According to one embodiment of the invention, as shown in fig.70f, an electronic device 7010 such as the one just described, may comprise a printing/scanning/copying unit (not shown) integrated within it. Although the device may have any width, preferably, the design of said electronic device (e.g. in this example, having approximately the height of an A4 paper) may be such that a user may feed an A4 paper 7015 to print a page of a document such as an edited letter.

Providing a complete solution for a mobile computing/ communication device may be extremely useful in many situations. For example, a user may draft documents such as a letter and print them immediately. Also for example, a salesman may edit a document such as an invoice in client's promises and print it for immediate delivery.

According to another embodiment, a foldable device comprising an extendable display unit and the data entry system of the invention may be considered. Said display may be a flexible display such as an OLED display. Fig. 70g shows said device 7050 in a closed position. Fig 70h shows said device 7050 comprising said extendable display unit 7051, and the keys 7053-7054 of said data entry system. Said device may have communication abilities. In this example, a microphone 7055 and a speaker 7056 are provided within said device, preferably, each on a different section of said device.

It is understood that this embodiment and the relating drawings are described and shown as examples. Many other embodiments and drawings based

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on the principles of this invention may be considered by people skilled in the art. For example, by referring to fig. 70b, when extending said display unit to a desired length, only said extended portion of said display unit may be used by said device. For example, a system such as the operating system of said device may manage and direct the output to said opened (e.g. extended) portion of said display unit. Also, said device may at least comprise at least part of the features of the systems described in this and other patent applications filed by this inventor.

A attachable/detachable data entry unit

As described before, an electronic device such as a Tablet PC may comprise the data entry features of the invention, such as a key configuration of the invention disposed on a front side of said device, a pointing device disposed at its backside wherein said pointing device uses at least a key in on the front side of said device and vise versa. Also as mentioned before, said device may comprise an extendable microphone/camera extending from said device towards a user's mouth. As described and shown before, said features may constitute an external data entry unit for said device. Fig. 71a, shows as an example, a detachable data entry unit 7100 for an electronic device such as a Tablet PC. Said unit may comprise two sections 7101-7102 wherein each of said sections comprises the keys 7103-7104 of a key arrangement of the invention to provide signals to said device. In this example, Said sections 7101, 7102 are designed to attach to the two extreme sides of said electronic device. At least one of said sections may comprise a pointing device (e.g. a mouse, not shown) wherein when said detachable data entry unit is attached to said electronic device, said

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pointing device may situate within the backside of said device and at least a key (e.g. a key of said key configuration) relating to said pointing device will be situated at the front side of said device, so that a user may simultaneously use said pointing device, and said at least one related key and/or configuration of keys disposed on said section with at least a same hand. Said data entry unit may also comprise an extendable microphone 7105 and/or camera 7106 disposed within an extendable member 7107 to perceive a user's speech. The features of a data entry unit of the invention are, earlier, described in detail. The two sections 7101-7102 of said data entry unit may be attached to each other by means such as at band(s) (e.g. elastic bands) 71010 so that to fix said unit to said electronic device. Said data entry unit may be connected to said device by wires 7108. It may be connected through, for example, a USB element 7109 connecting to a USB port of said electronic device. Said data entry unit may also be, wirelessly, connected to said device. Also, sections 7101, 7102 may be separate sections so that instead of attaching them to the electronic device a user may for example hold each of them in one hand (e.g. his hand may be in his pocket) for data entry.

Other attachment means for attaching said data entry unit to said electronic device may be considered. For example, as shown in fig. 71b, said device 7100 may comprise sliding and or attaching/detaching members 7111-7112 for said purpose.

It is understood that said data entry unit may comprise any number of sections. For example, said data entry unit may comprise only one section wherein the features such as the those just described (e.g. keys of the keypad, pointing device, etc. may be integrated within said section.

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Fig. 71c shows said data entry unit 7100 attached/connected to an electronic device such as a computer (e.g. a tablet PC). As shown, the keys of said data entry unit 7103-7104 are situated at the two extremes of said device. a microphone is extended towards the mouth of a user and a pointing device 7105 (not shown, here in the back or on the side of said device) is disposed on the backside of said data entry unit (e.g. and obviously at the backside of said device). At least a key 7126 corresponding to said pointing device is situated on the front side of said data entry unit. Obviously, said pointing device and itds corresponding keys may be locates at any extreme side (e.g. left, right, down). Also, multiple (e.g. two, one at left, another at right) pointing and clicking devices may be used wherein the elements of said multiple pointing and clicking device may work in conjunction with each other. Using his two hands, a user may hold said device, and simultaneously use said keys and said microphone for entering data such as a text by using the data entry systems of the invention. Said user, may also, simultaneously, use said pointing device and its corresponding keys.

It is understood that said data entry unit may also, wirelessly, connected to a corresponding device such as Said Tablet PC. Also, said pointing device and/or its keys, together or separately, may be situated on any side of said electronic device.

According to one embodiment of the invention, a flexible display unit such as an OLED display may be provided so that, in closed position, said display unit has the form of a wrist band to be worn around a wearers wrist or attached to a wrist band of a wrist-mounted device and eventually be connected

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to said device. Fig. 72 a shows an as example, a wrist band 7211 of an electronic device 7210 such as a wrist electronic device wherein to said band said display unit in closed position is attached. Fig 72b shows said display unit 7215 in detached position. Fig. 72c shows said display unit 7215 in an open position.

According to one embodiment of the invention, to help the system to better distinguish between the speech of two symbols such as letters/words/part-of-a-words having substantially similar pronunciations, at least a different phoneme-set being substantially similar with a first symbol of said symbols but being less resembling to the other symbol, may be assigned to said first symbol, so that when user speaks said first symbol, the chances of recognition of said symbols by the voice recognition system augments. For example, if the letter "d" and the letter "b" are assigned to a same predefined interaction with a same key, to the speech of the letter "d" in addition to the phoneme-set "dē", another resembling phoneme-set "tē" (in this example, letter "t" is assigned to another key) may also be assigned. On the other hand, in addition to in addition to the phoneme-set "bē", another resembling phoneme-set "pē" (in this example, letter "p" is assigned to another key) may also be assigned. Letters "b" and "d" have similar substantially similar pronunciations, but the pronunciations of the letters "t" (phoneme-set "tē") and "p" are more significantly different. For example, if a user presses the key corresponding to the letters "b" and "d" and says "dē", the system may erroneously recognize said speech as "tē". In this case the system will provide the character assigned to said speech combined with said key press and provides the letter "d". It is understood that examples provided here are only to demonstrate this embodiment. Various configuration and assignments of

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phonemes/phoneme-sets to any letters/words/part-of-a-words based on the principled described may be considered by the people skilled in the art.

The systems, features, enhancements, etc., described in this application and other applications filed by this inventor may apply to all of the embodiments of the invention. Also an embodiment of the invention may function separately or it may function combined with one or more other embodiments of the invention.

Thus, while there have been shown and described and pointed out fundamental novel features of the invention as applied to alternative embodiments thereof, it will be understood that various omissions and substitutions and changes in the form and details of the disclosed invention may be made by those skilled in the art without departing from the spirit of the invention. It is the intention, therefore, to be limited only as indicated by the scope of the claims appended hereto. It is to be understood that the drawings are not necessarily drawn to scale, but that they are merely conceptual in nature.

For example, although, in different embodiments a telephone-type keypad was used to demonstrate different embodiments of the invention, obviously, any kind of keypad with any kind of configurations of symbols assigned to the keys of said keypad may be used with the embodiments of the invention.

For not frequently repeating the principles of the data entry system of the invention, in many paragraphs of this application there is mentioned that one or more symbol such as character/word/portion-of-a-word/function, etc., may be assigned (e.g. correspond) to a key (or an object other than a key). It is understood that, the symbols are supposed to be inputted by a predefined

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interaction with the key according to the principles of the data entry systems explained in many other embodiments. For example, unless otherwise mentioned, said symbols, may preferably be inputted by a predefined simplest interaction with said key which may be a single-pressing action on said key (as explained in many embodiments of the invention). Also, in many paragraphs after explaining the assignment of symbols such as letter/phoneme-sets/character (letter)-sets/chain-of-letters/etc (e.g. generally, symbols to be spoken) to a key, to avoid the repeating of the principles of the data entry system of the invention for inputting said symbols, said principles may not have been mentioned. In is understood that, unless otherwise mentioned, obviously, (as explained in many embodiments of the invention) said kind of symbols (e.g. generally, symbols to be spoken), are preferably intended to be entered by a corresponding pressing action on a corresponding key combined with, preferably simultaneously, the speech corresponding to said symbol.

It must be noted that in many paragraphs of this application the terms "character-set" or "character set" have been used to define a chain of characters.

Although in different embodiments of the invention, a voice recognition system have been mentioned or intended to be used to perceive and recognize a user's speech, a lip-reading system may be used instead-of or in-addition-to said voice recognition system to perceive and recognize said user's speech (and vise versa).

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I claim:

1. A data input system comprising:

a keypad defining a plurality of keys, wherein each key contains at least one symbol of a group of symbols, said group of symbols divided into subgroups comprising at least one of alphabetical symbols, numeric symbols, and command symbols, wherein each subgroup is associated with at least a portion of a user's finger; and

a finger recognition system in communication with at least one key of said plurality of keys, wherein said at least one key has at least a first symbol from a first subgroup and at least a second symbol from a second subgroup, wherein said finger recognition system is configured to recognize said portion of said user's finger when said finger interacts with said key so as to select said symbol on said key corresponding to the subgroup associated with said portion of said user's finger.

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553,575

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(74) Agent: SOFER, Joseph; Sofer & Haroun, LLP, 317 Madison Avenue, Suite 910, New York, NY 10017 (US).

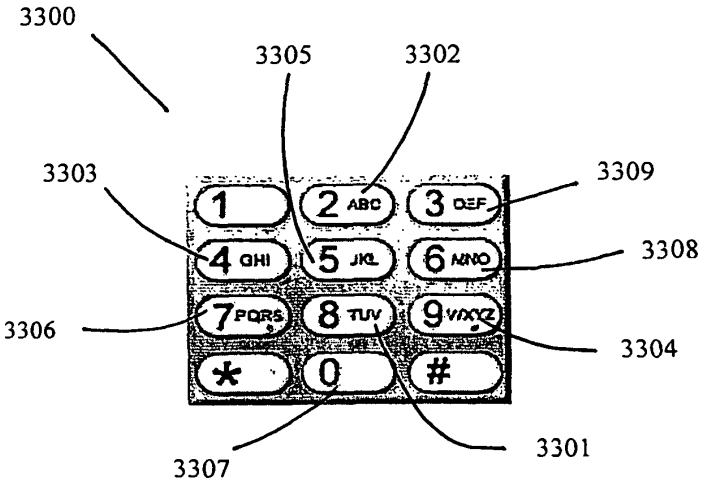
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

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(54) Title: SYSTEMS TO ENHANCE DATA ENTRY IN MOBILE AND FIXED ENVIRONMENT



(57) Abstract: A data input system having a keypad defining a plurality of keys, each key contains at least one symbol of a group of symbols. The group of symbols is divided into subgroups each having at least one of alphabetical symbols, numeric symbols, and command symbols, where each subgroup is associated with at least a portion of a user's finger. A finger recognition system is in communication with at least one key, where the key has at least a first symbol from a first subgroup and at least a second symbol from a second subgroup, The finger recognition system is configured to recognize the portion of the user's finger when the finger interacts with the key so as to select the symbol on the key, corresponding to the subgroup associated with the portion of the user's finger.

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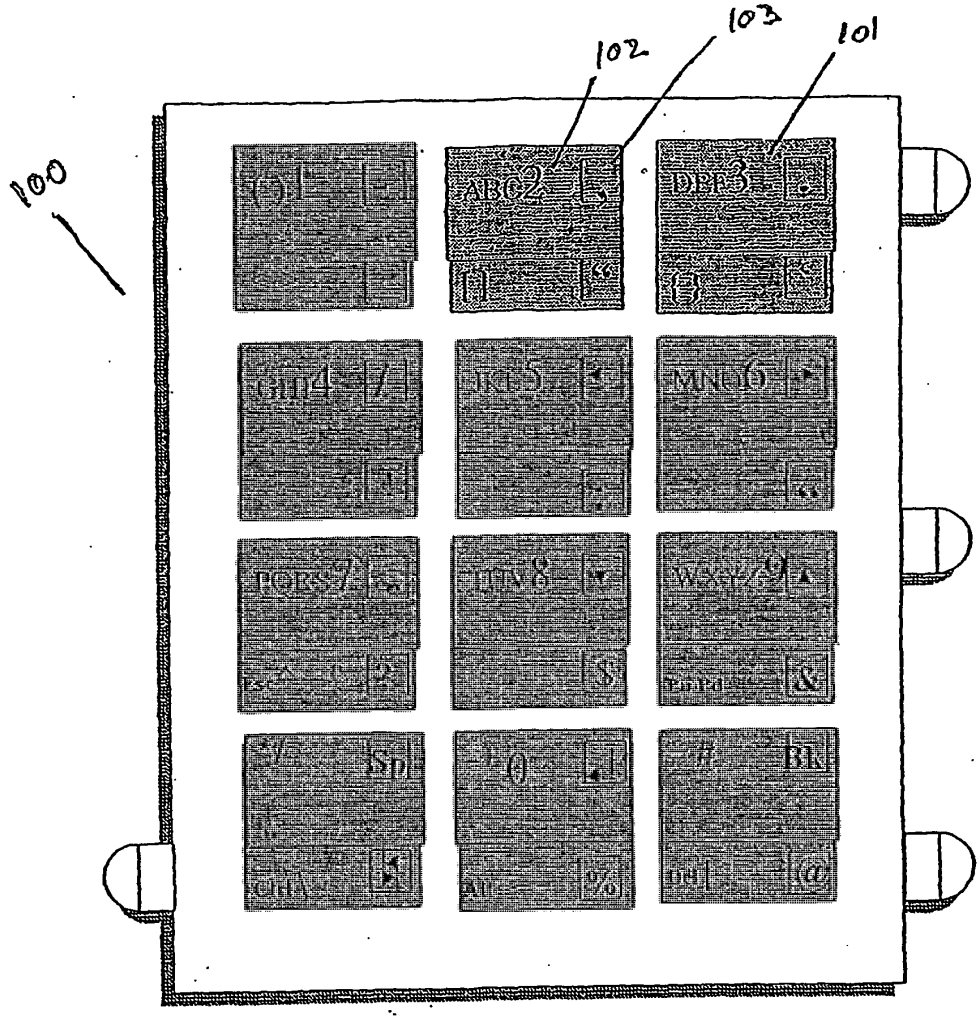


Fig. 1

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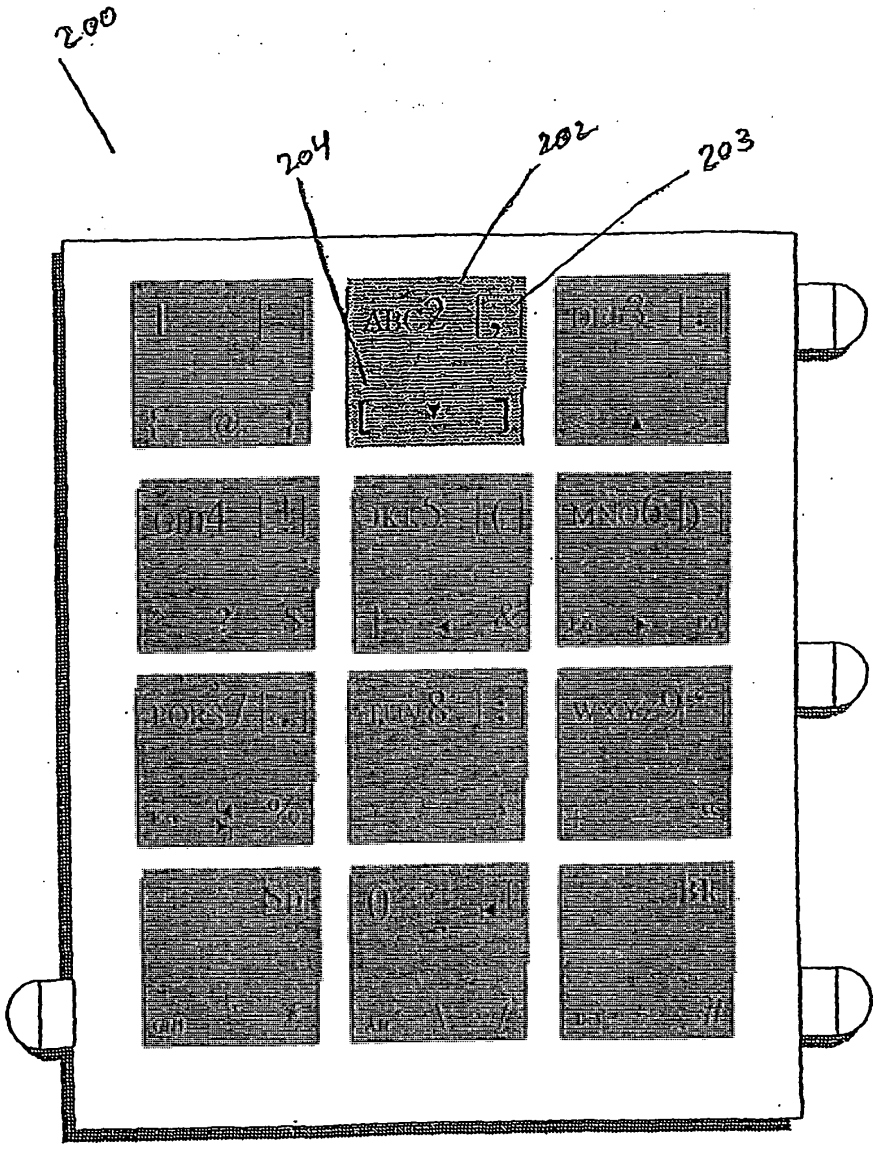


Fig. 2

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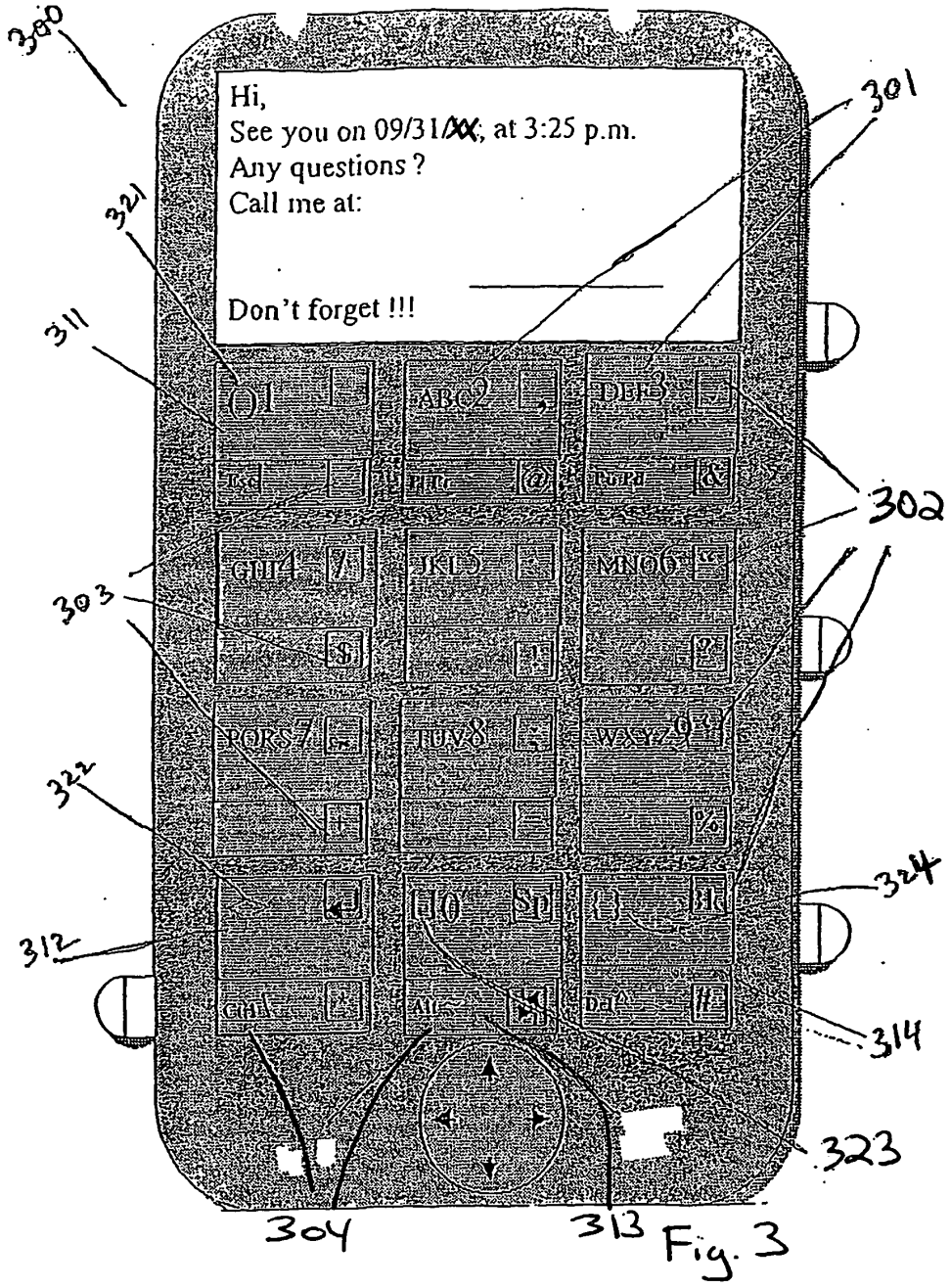


Fig. 3

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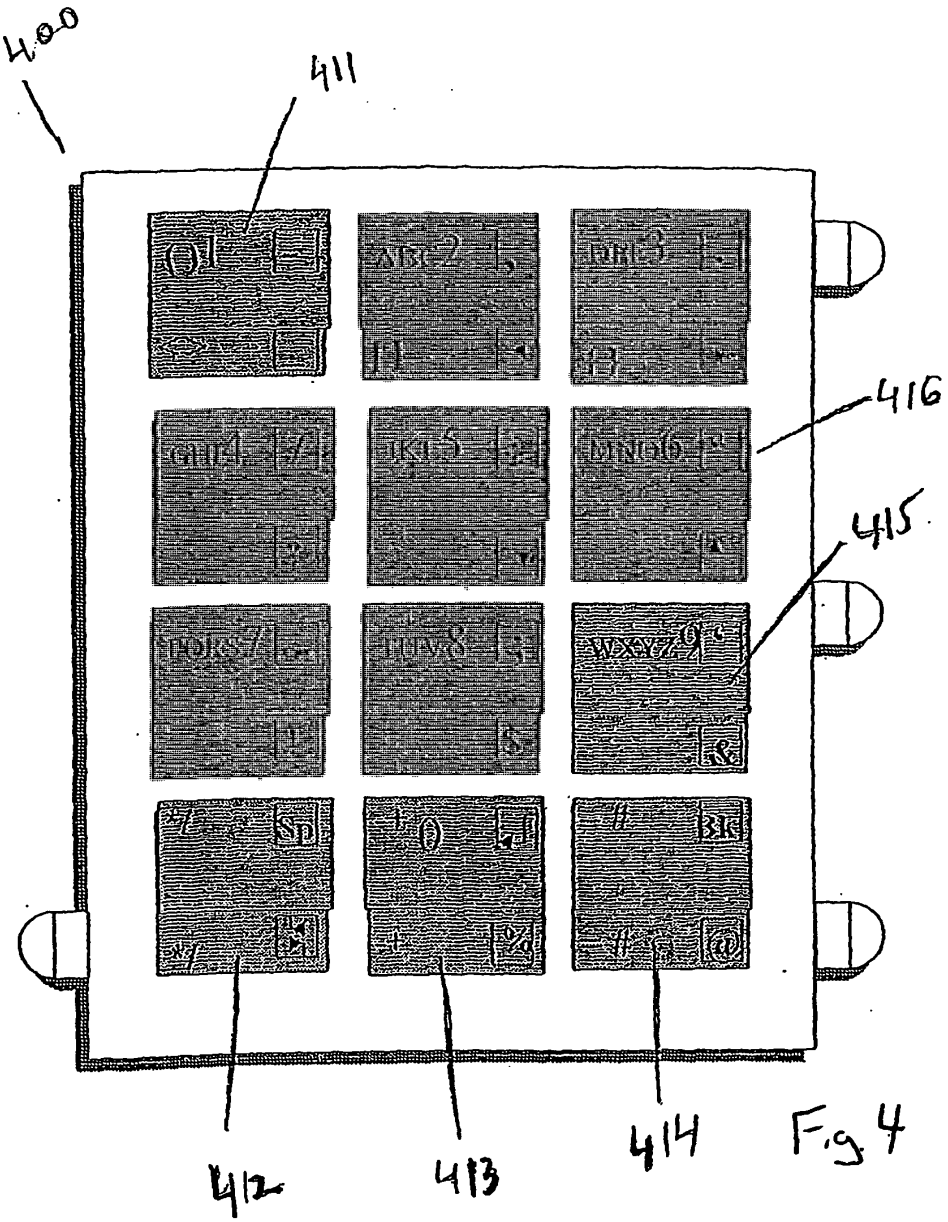


Fig 4

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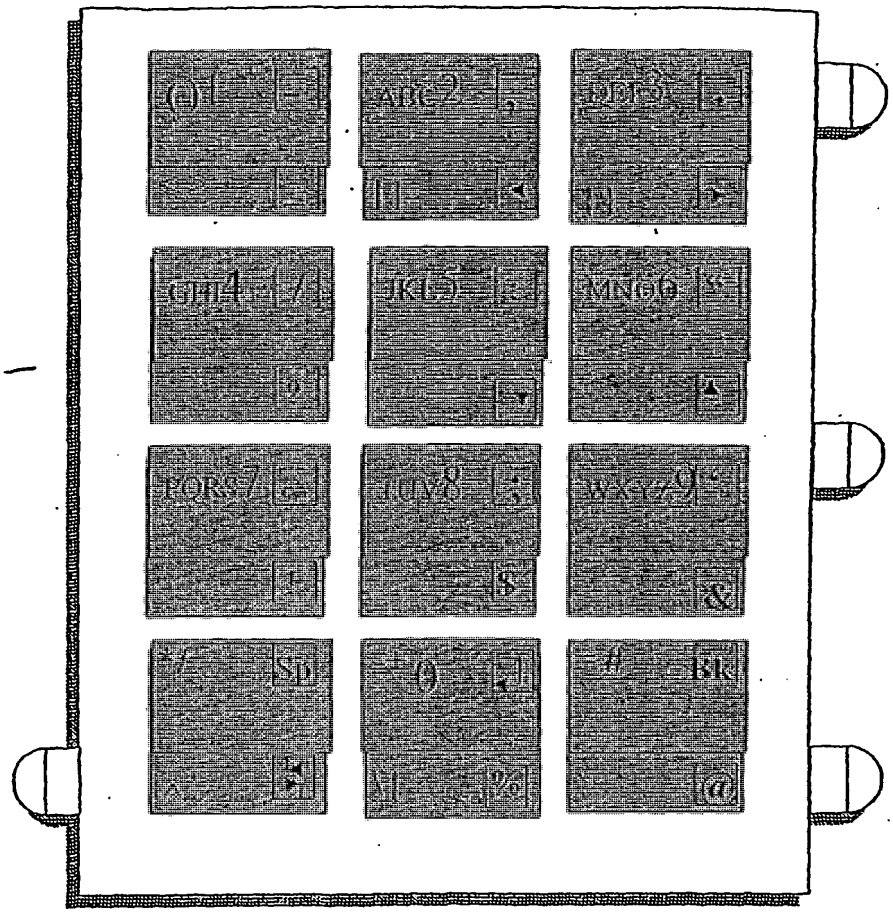
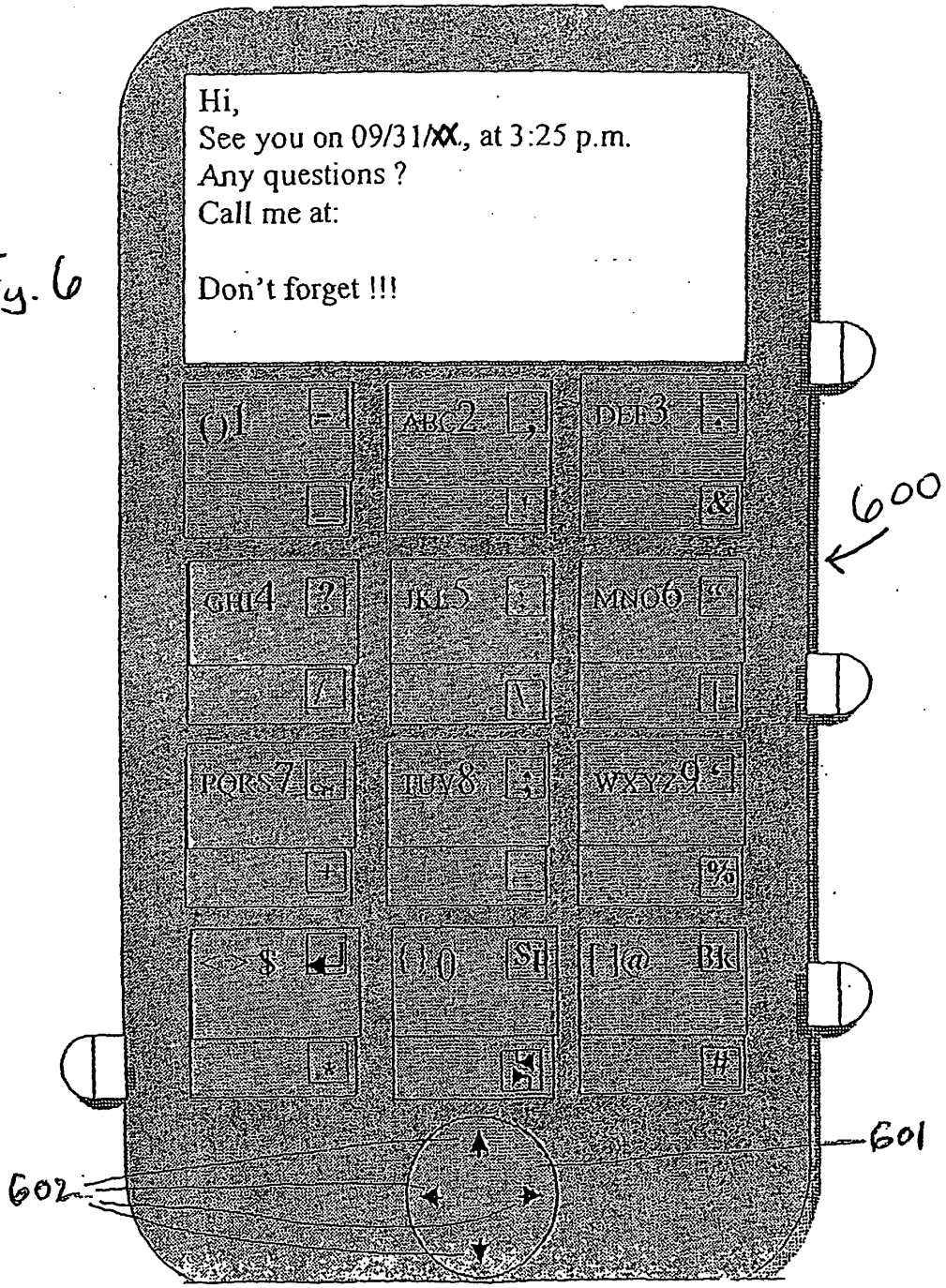
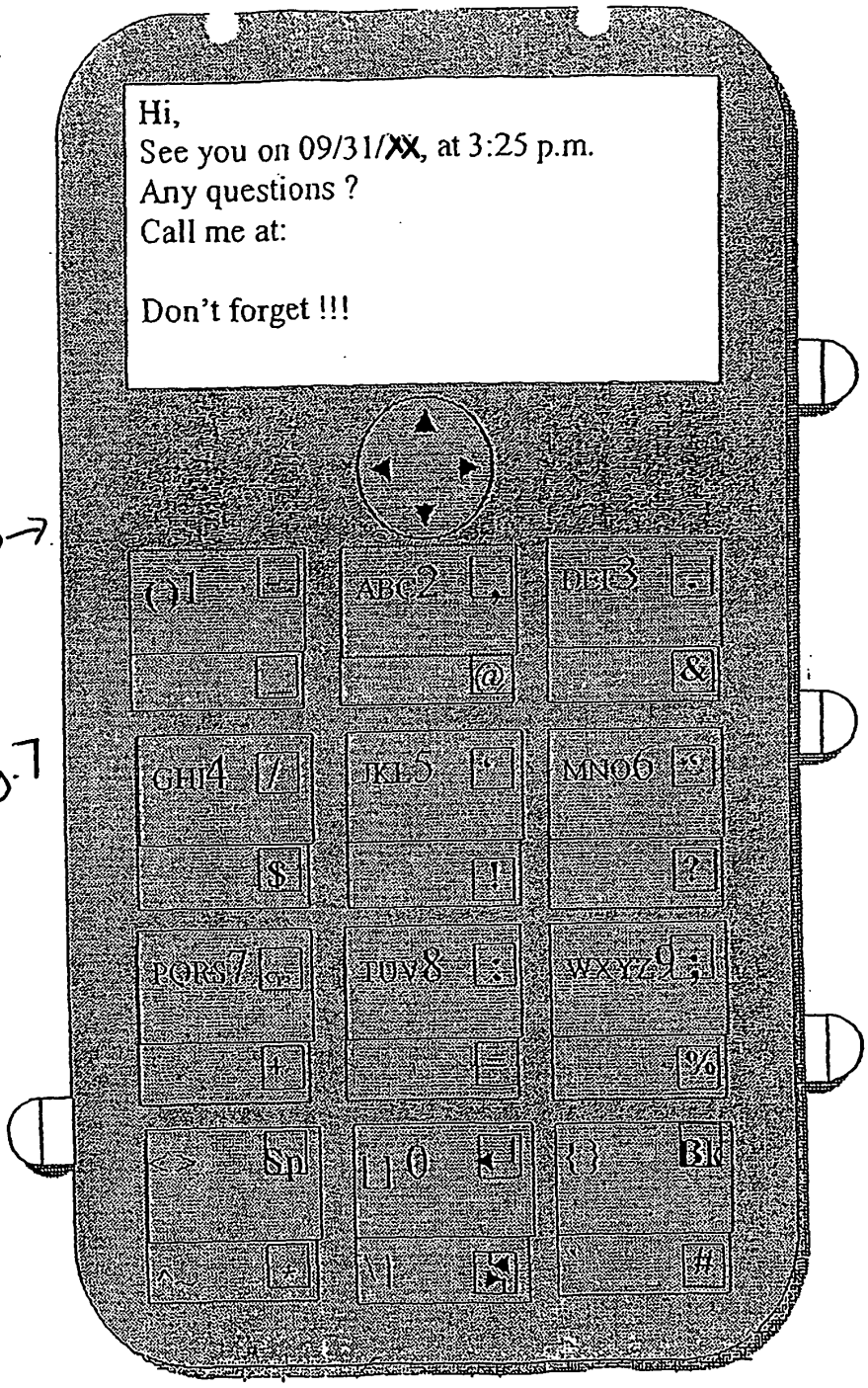


Fig. 5

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Fig. 6


Hi,
See you on 09/31/XX., at 3:25 p.m.
Any questions ?
Call me at:
Don't forget !!!
600
601
602



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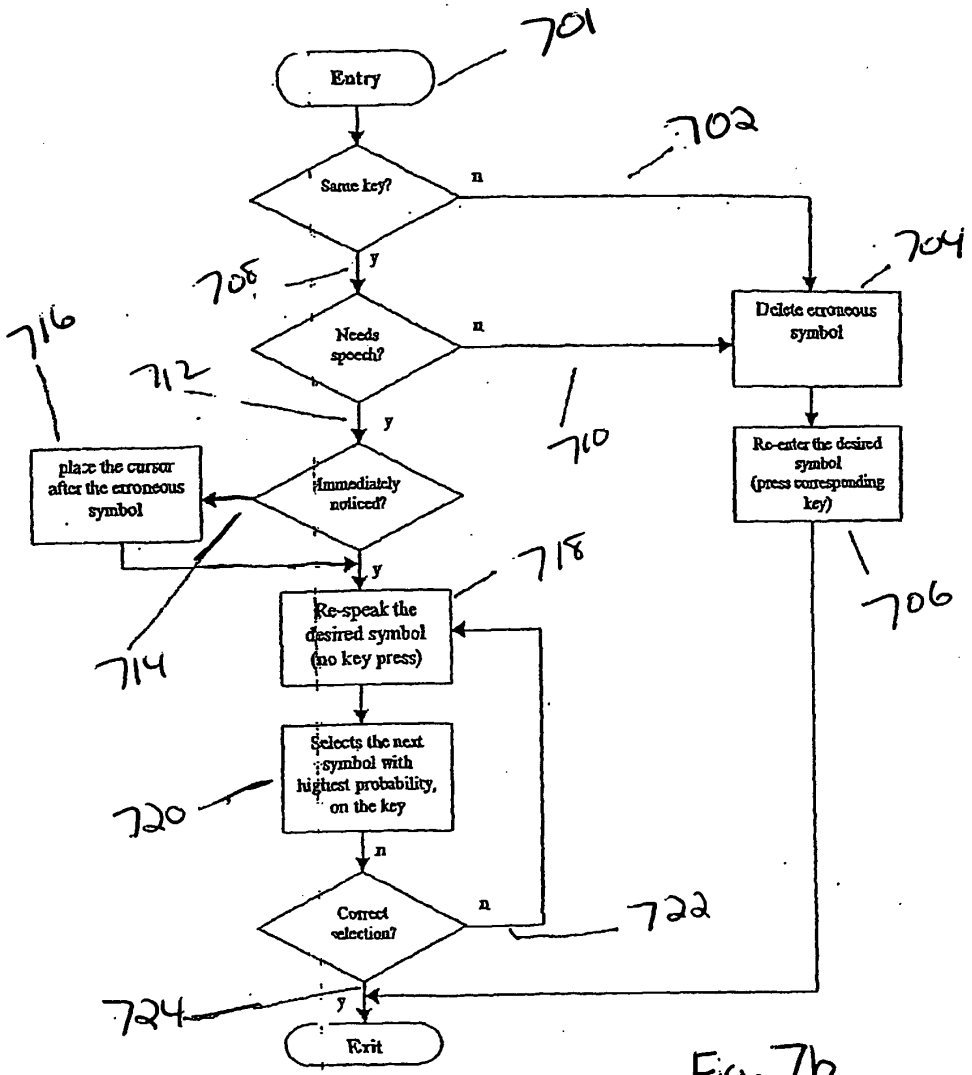


Fig. 7b

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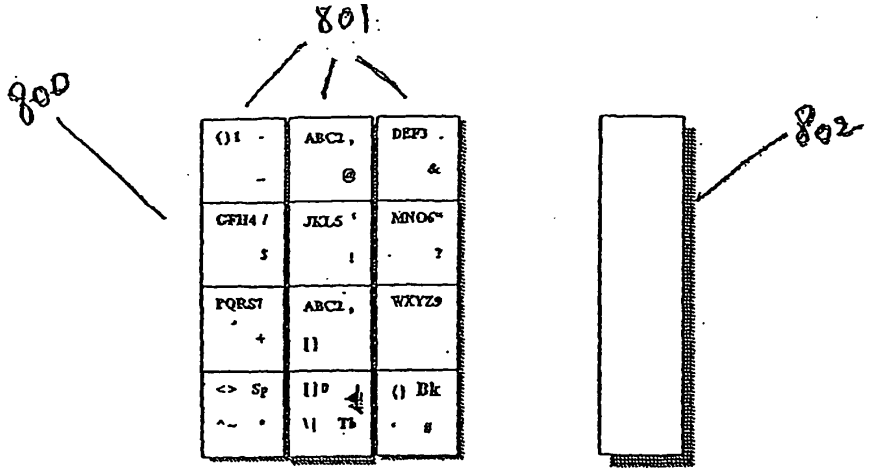


Fig. 8

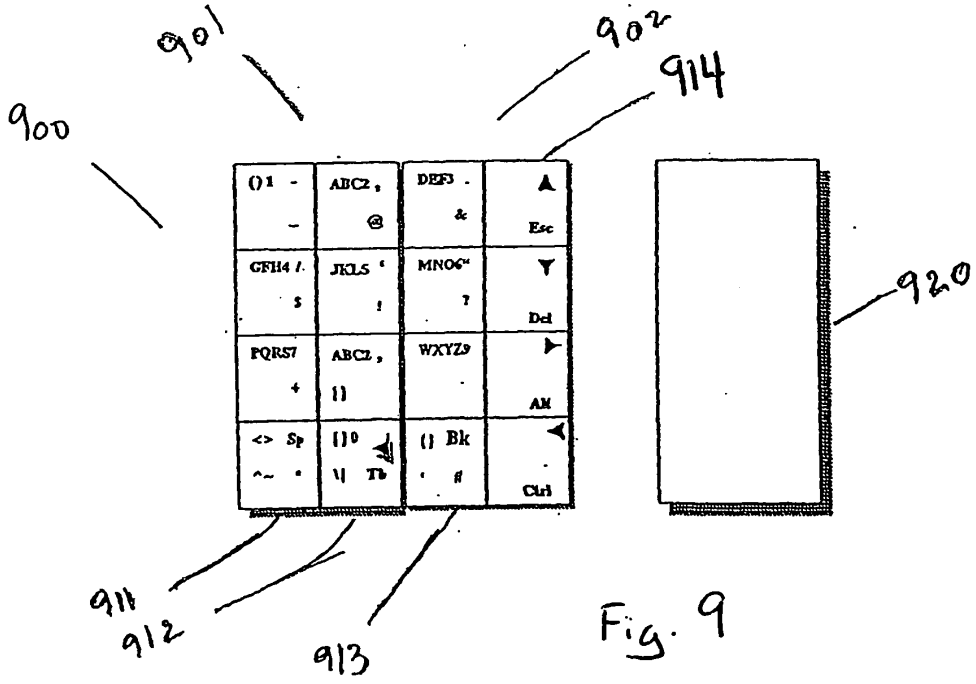


Fig. 9

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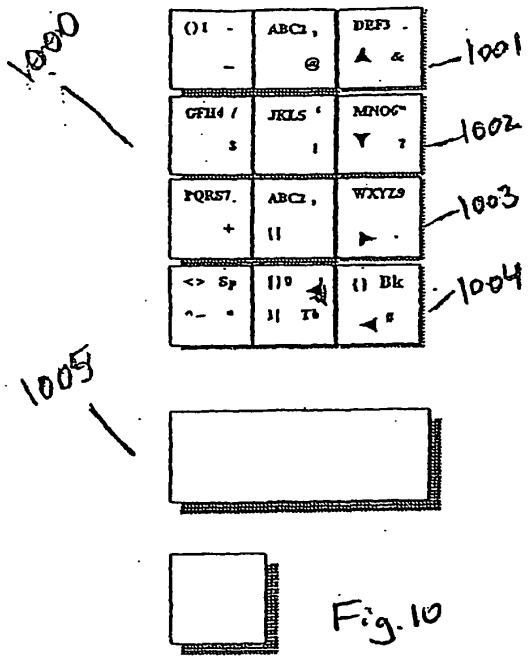


Fig. 10

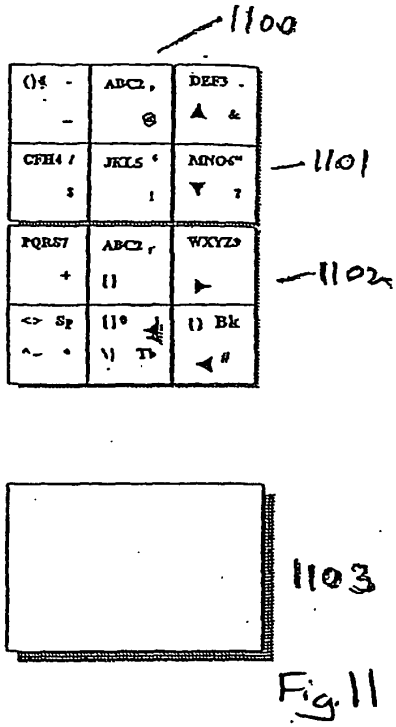


Fig. 11

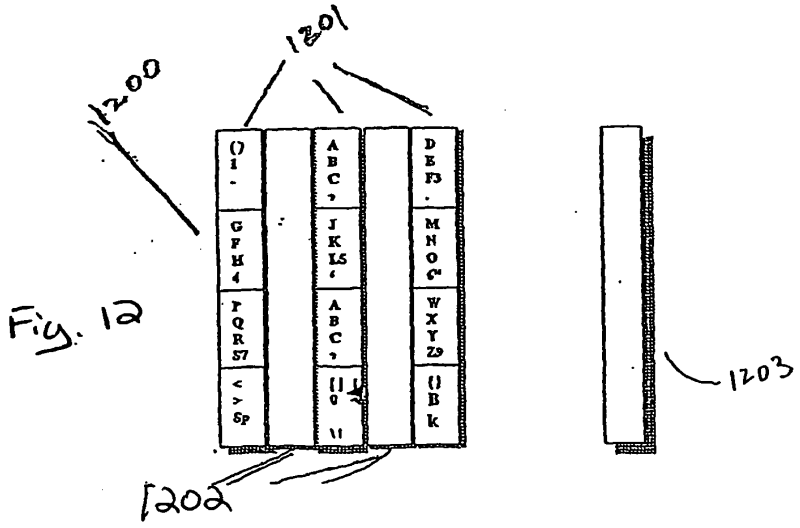


Fig. 12

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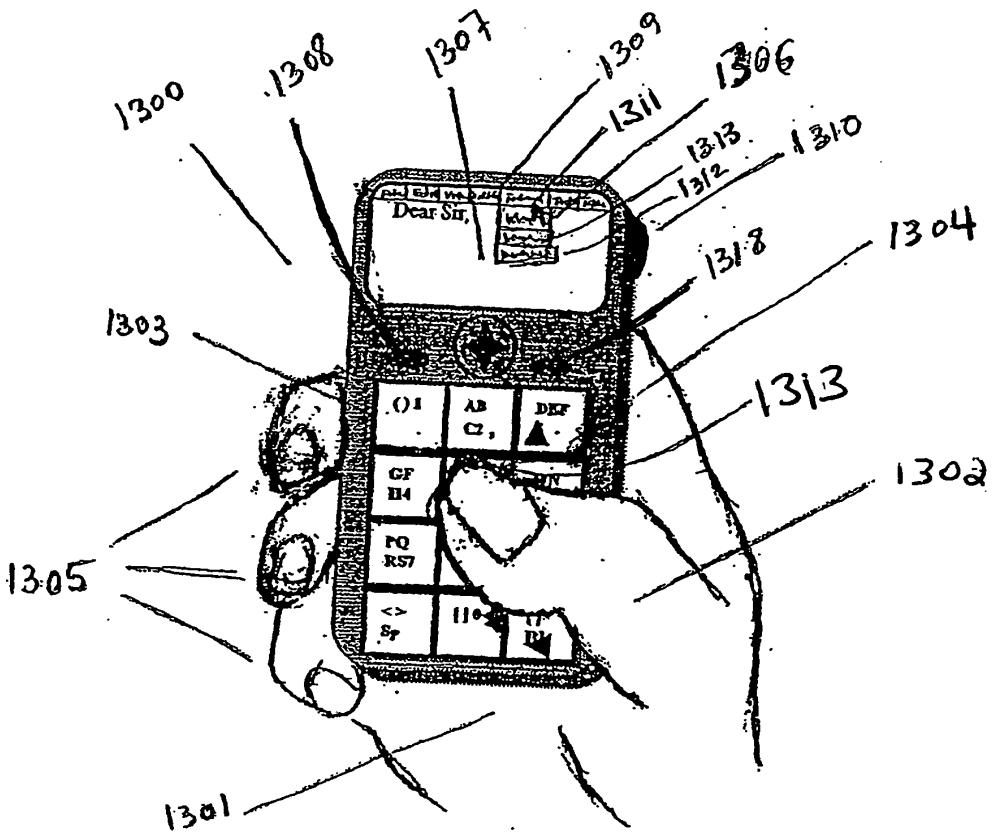


Fig. 13

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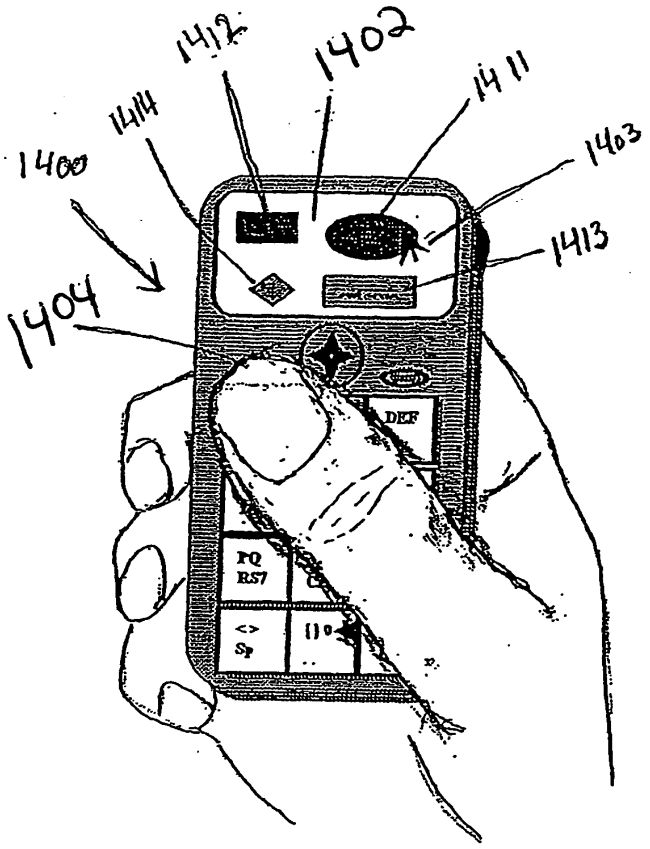


Fig. 14

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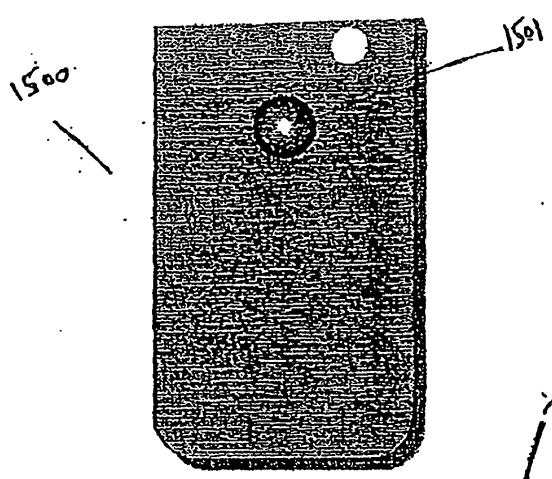


Fig. 15

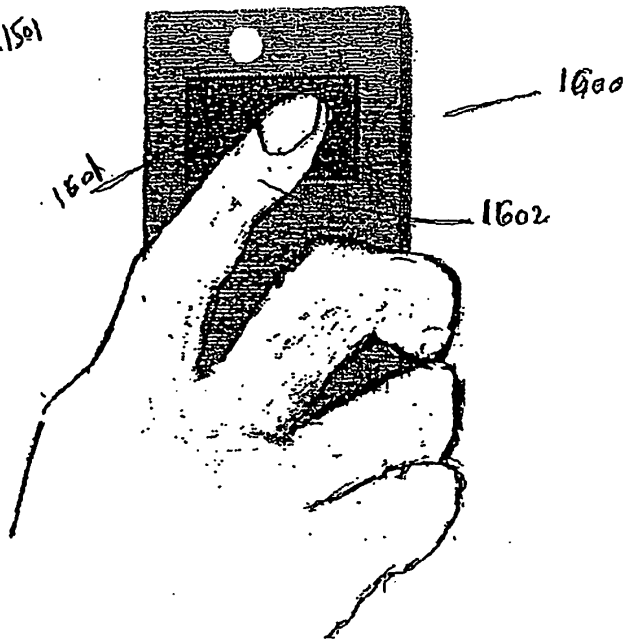


Fig. 16

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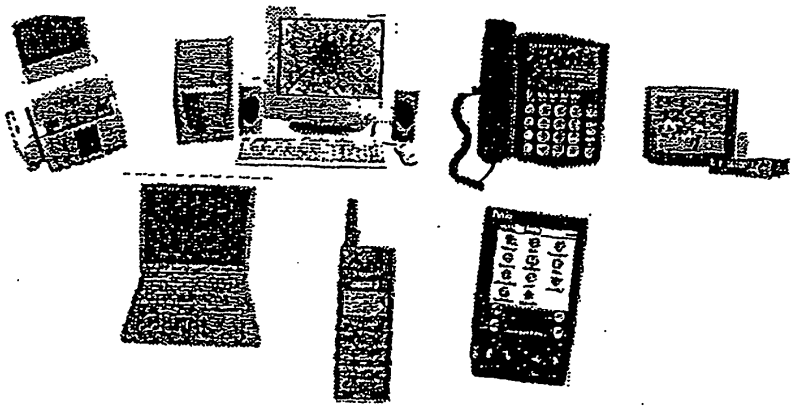


Fig. 17

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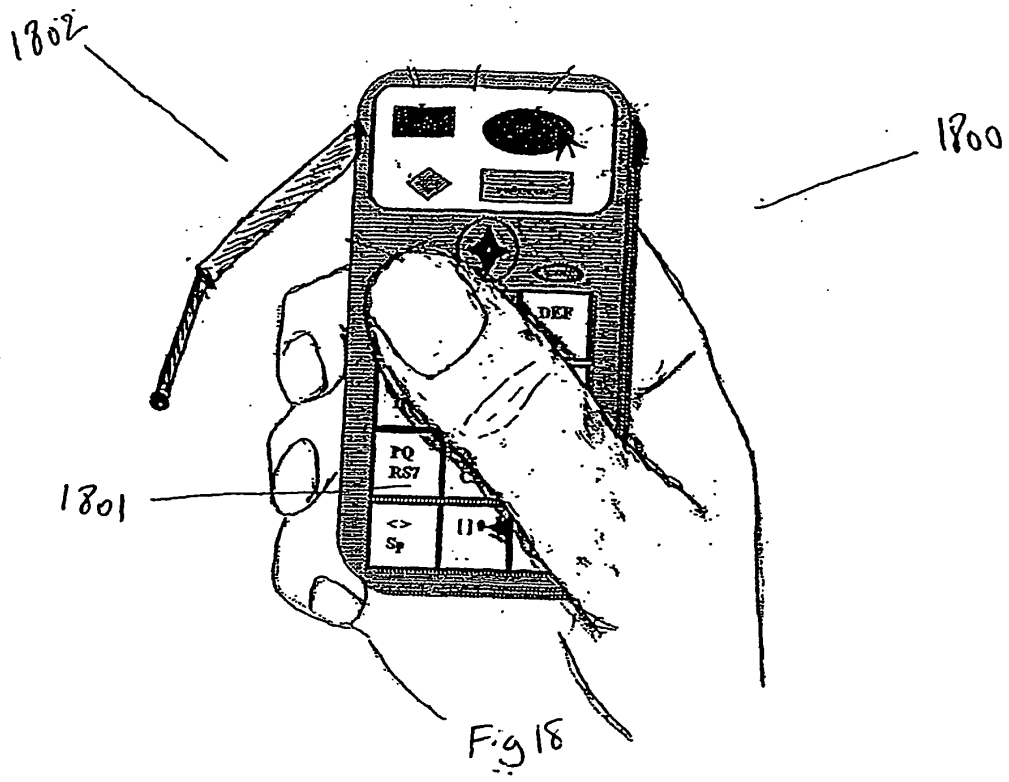


Fig 18

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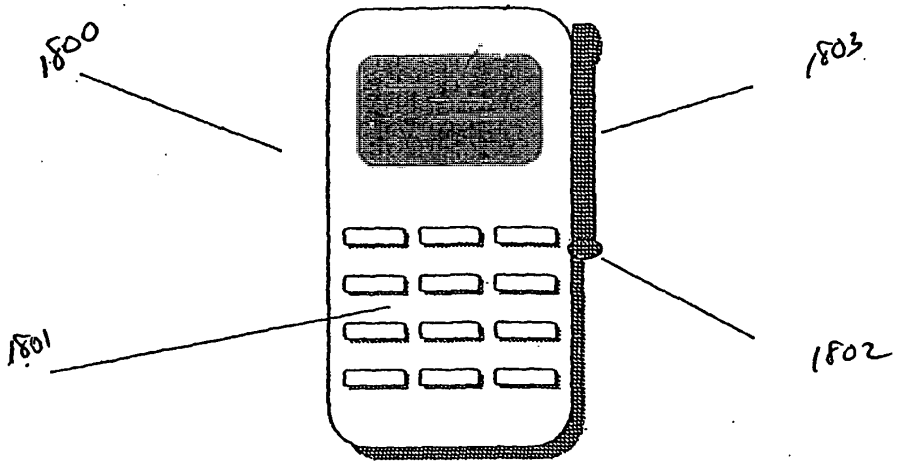


Fig. 18B

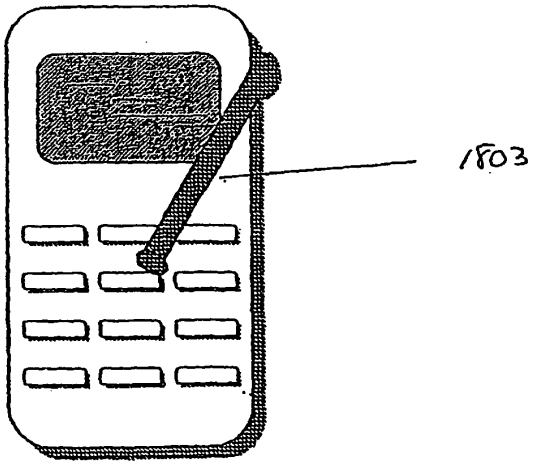


Fig. 18C

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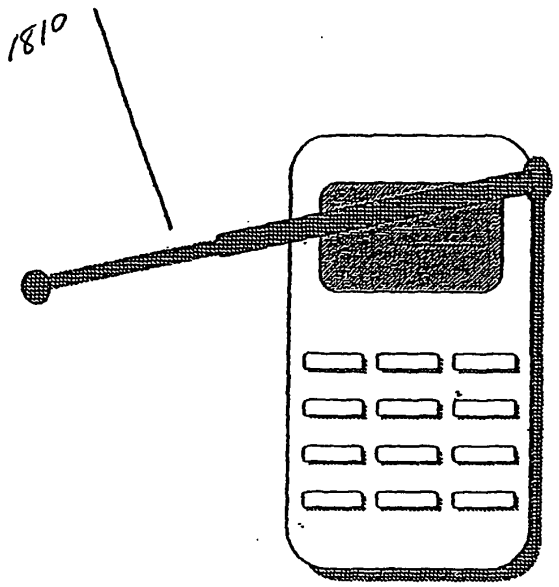


Fig 18D

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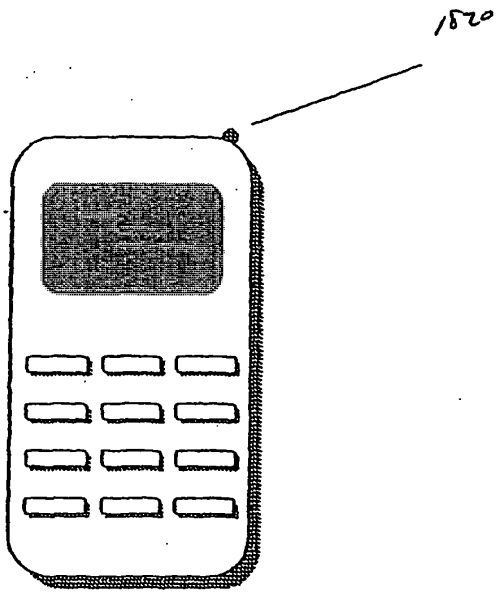


Fig 18E

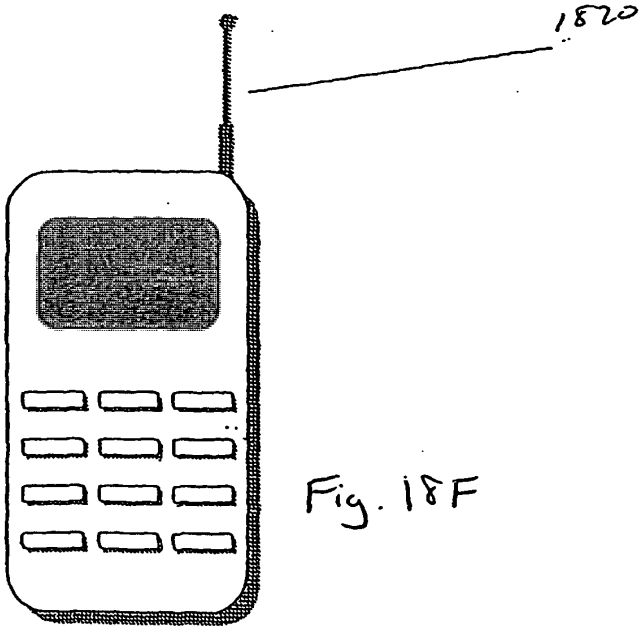


Fig. 18F

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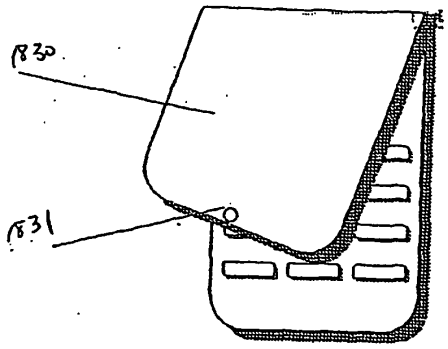


Fig. 18G

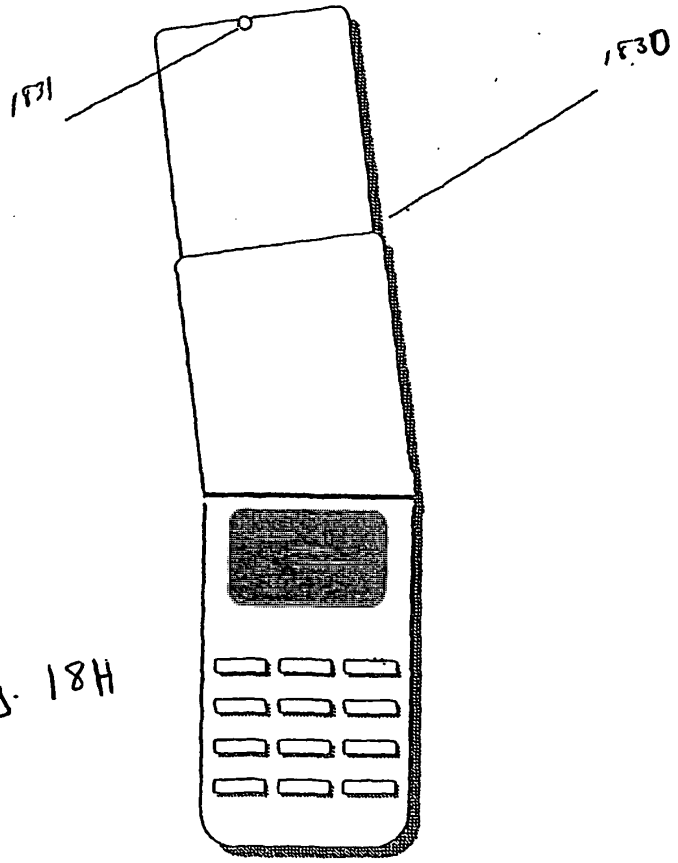


Fig. 18H

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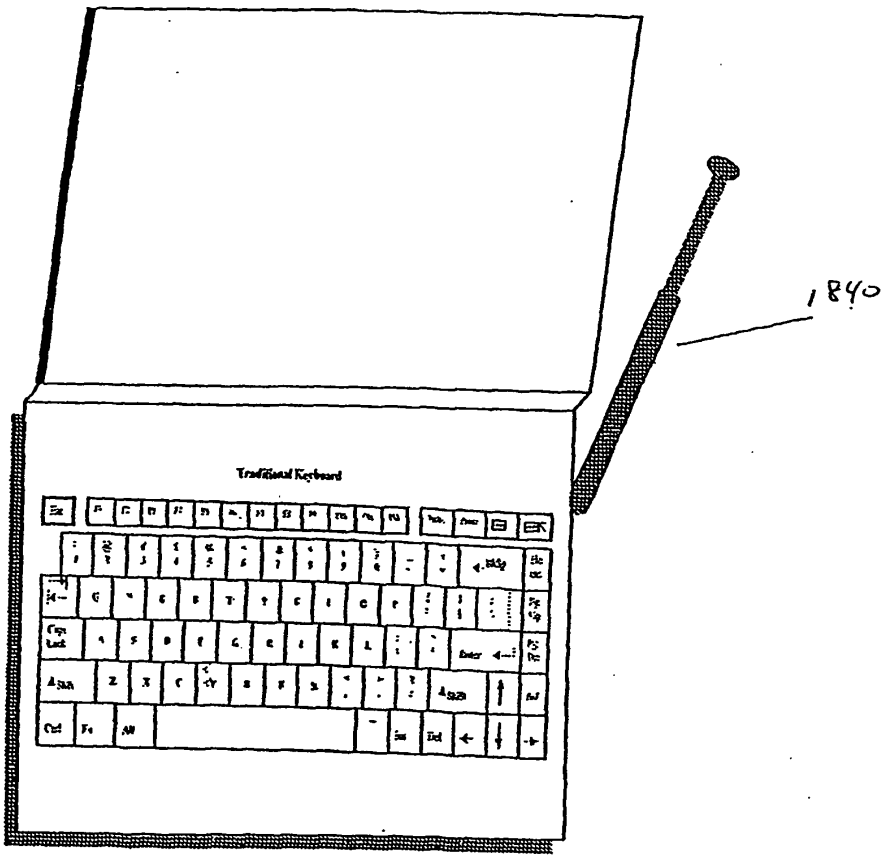


Fig. 18I

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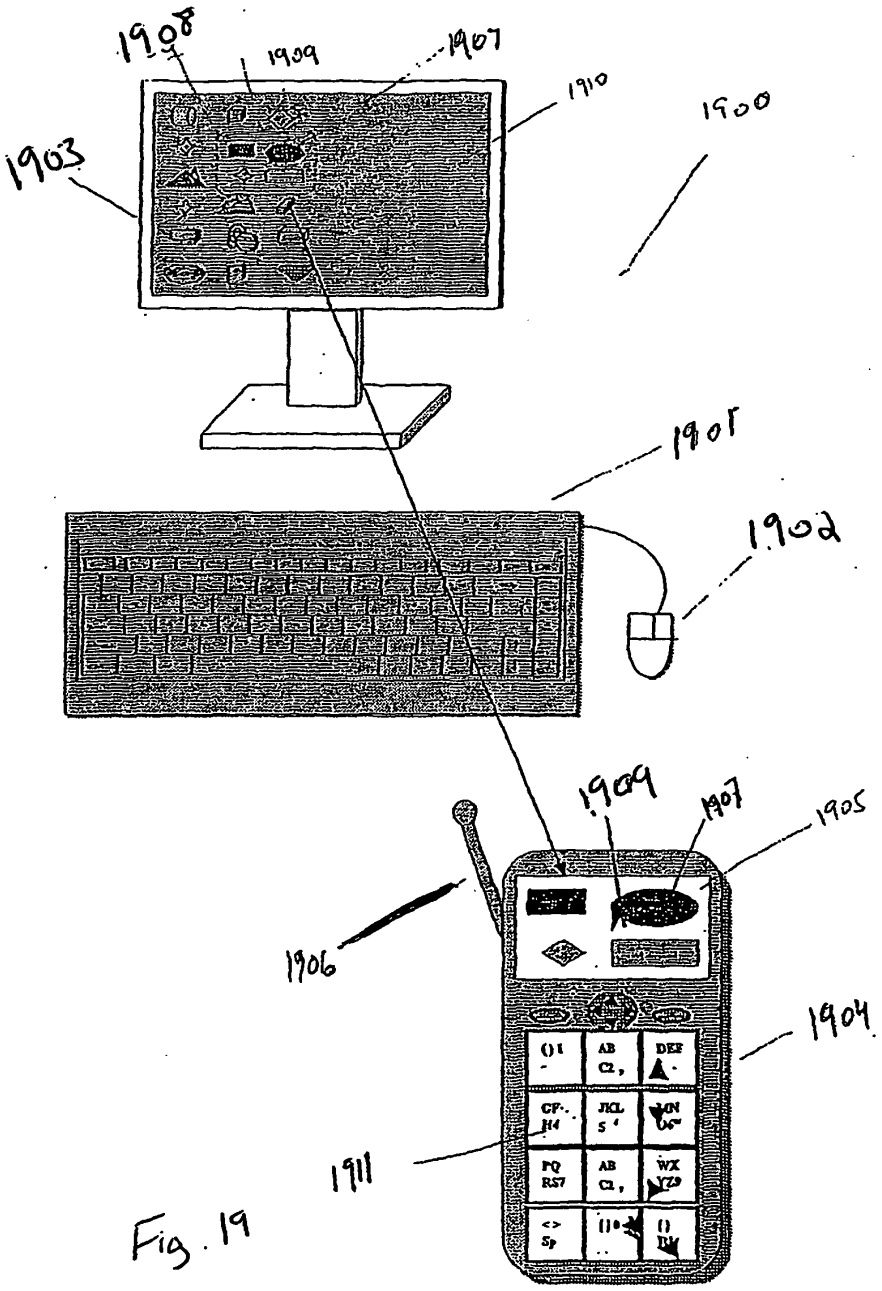


Fig. 19

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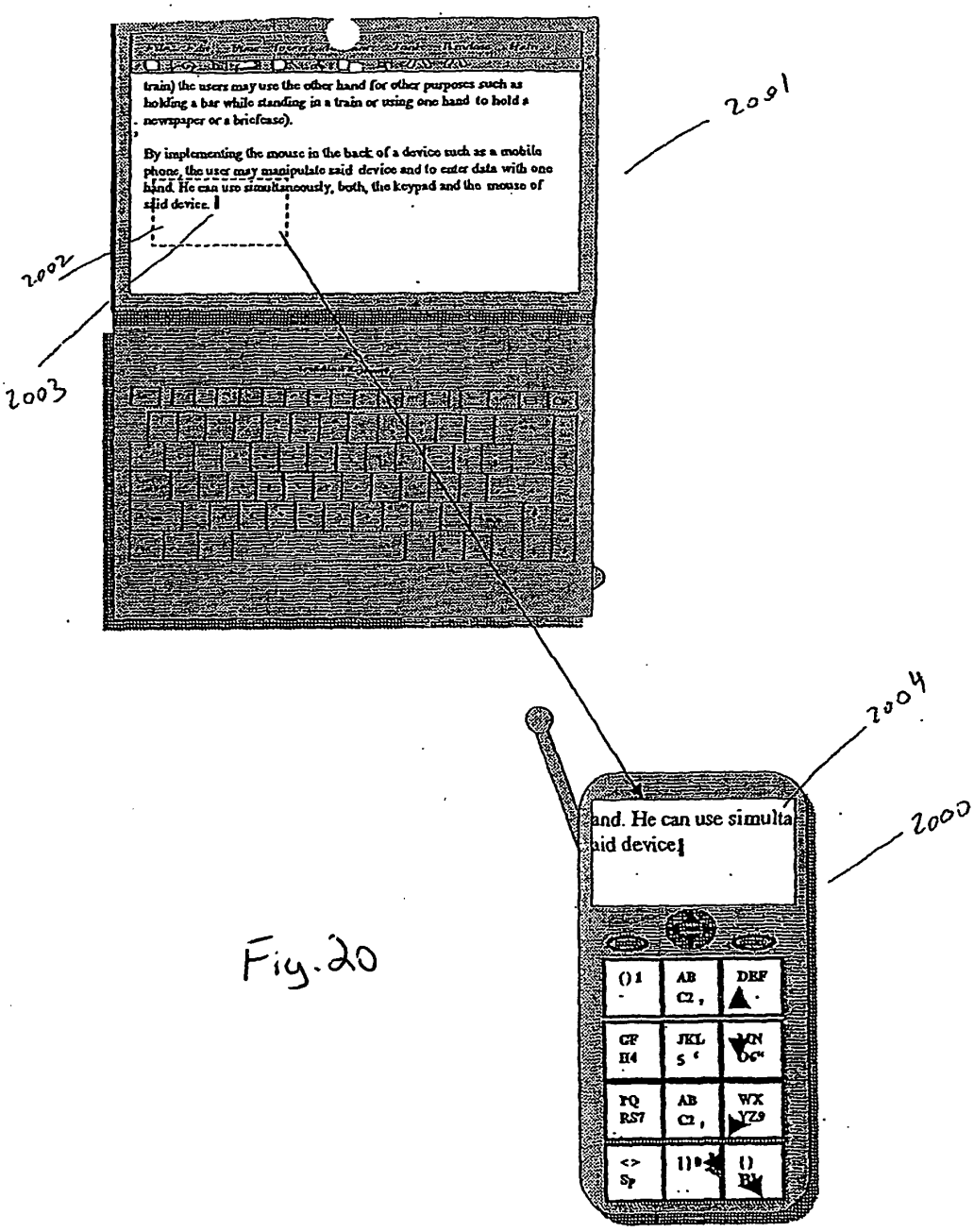


Fig. 20

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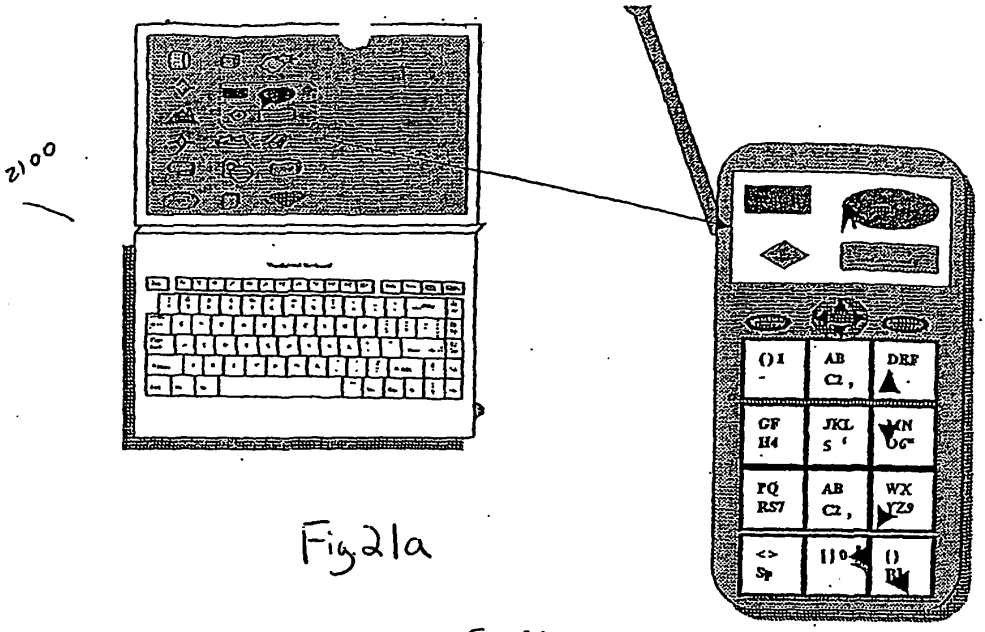


Fig 21a

Fig 21a

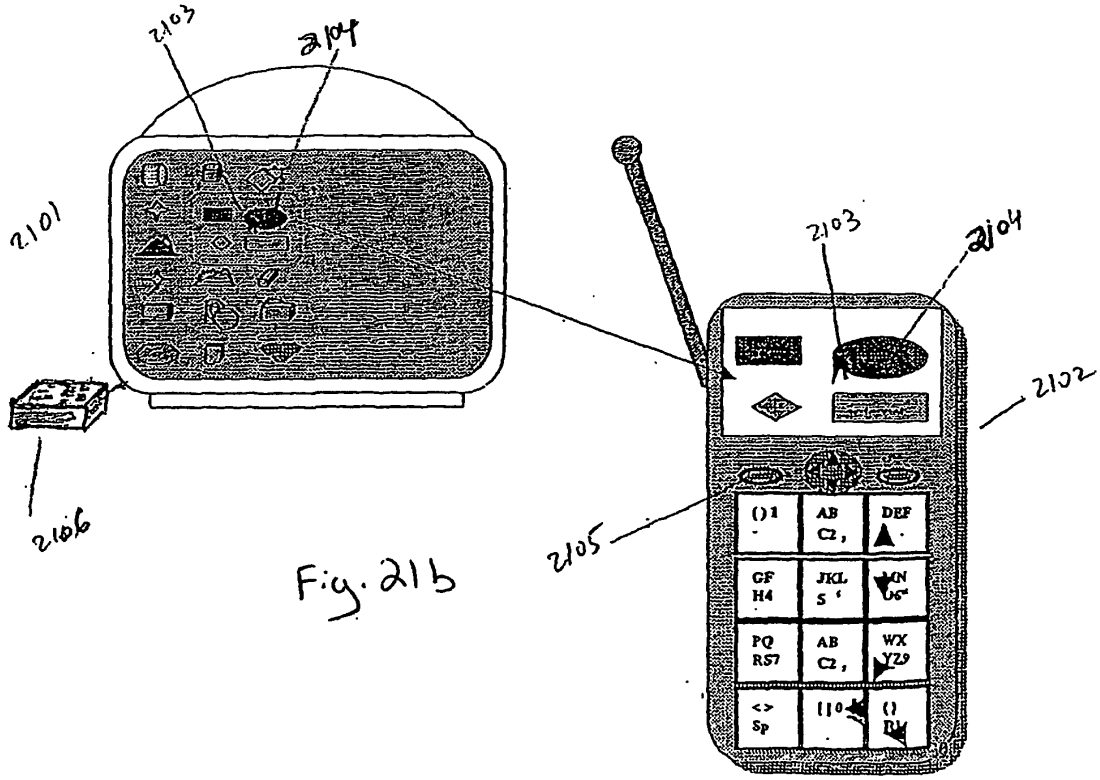


Fig. 21b

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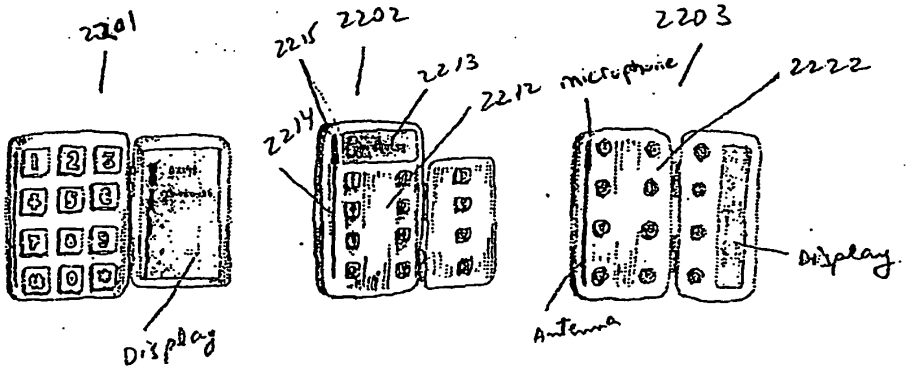


Fig. 22a

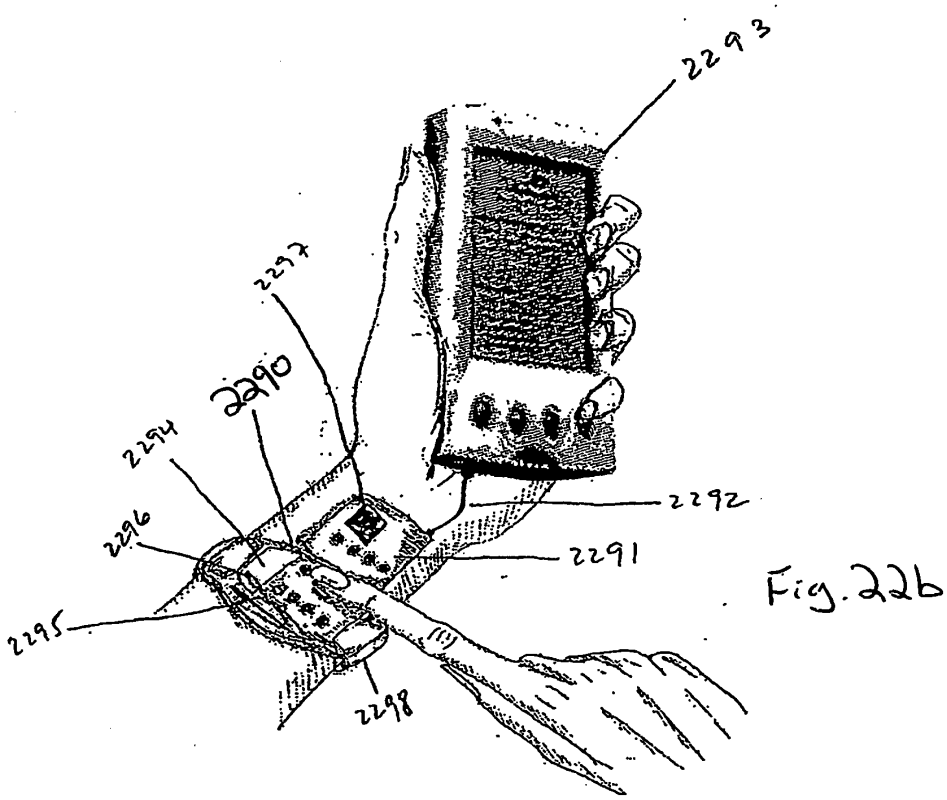


Fig. 22b

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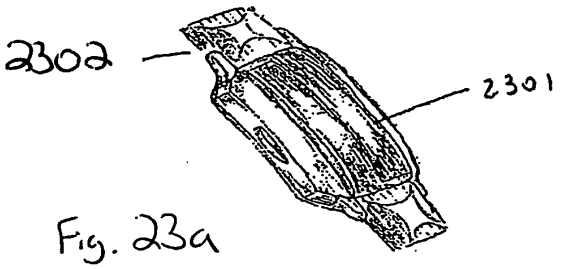


Fig. 23a

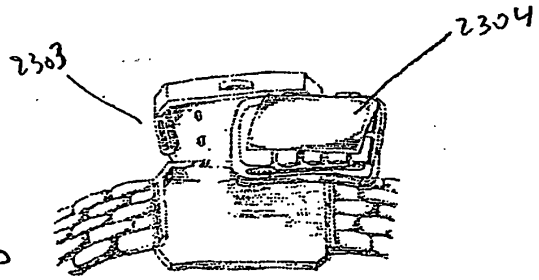


Fig. 23b

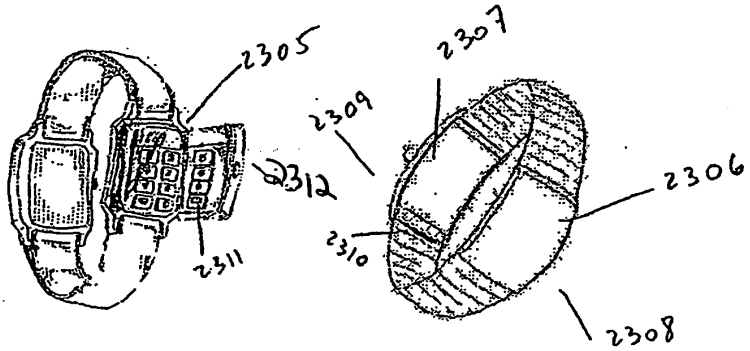


Fig. 23c

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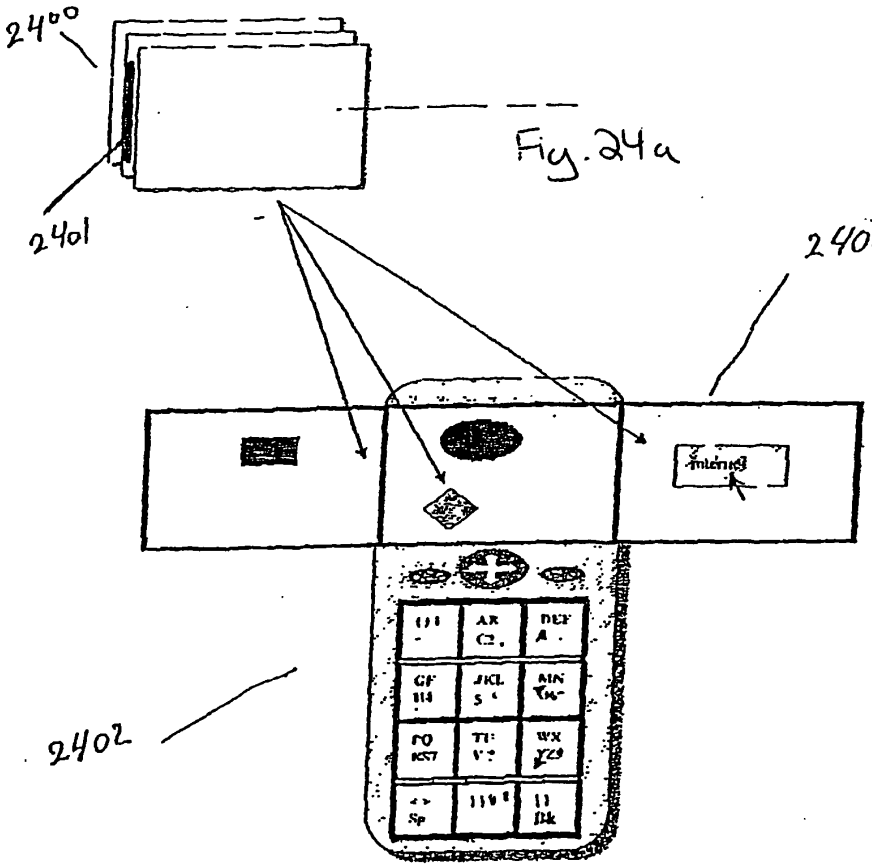


Fig. 24a

Fig. 24b

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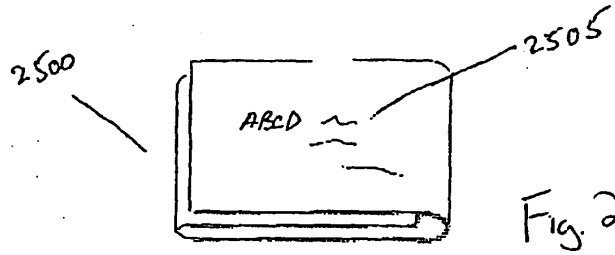


Fig. 25a

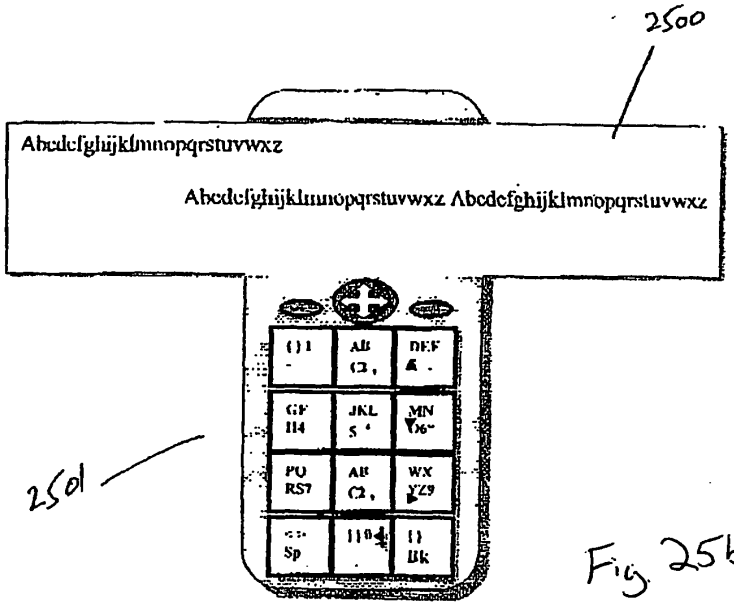


Fig. 25b

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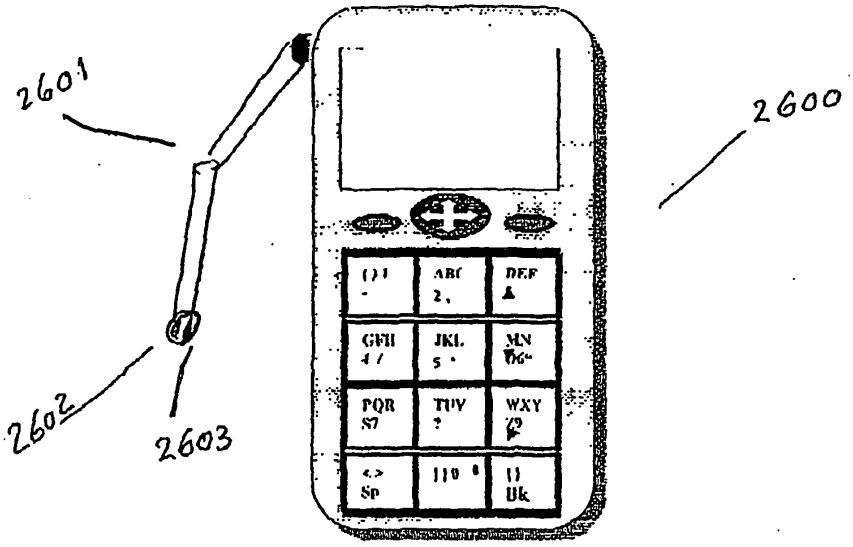


Fig. 26

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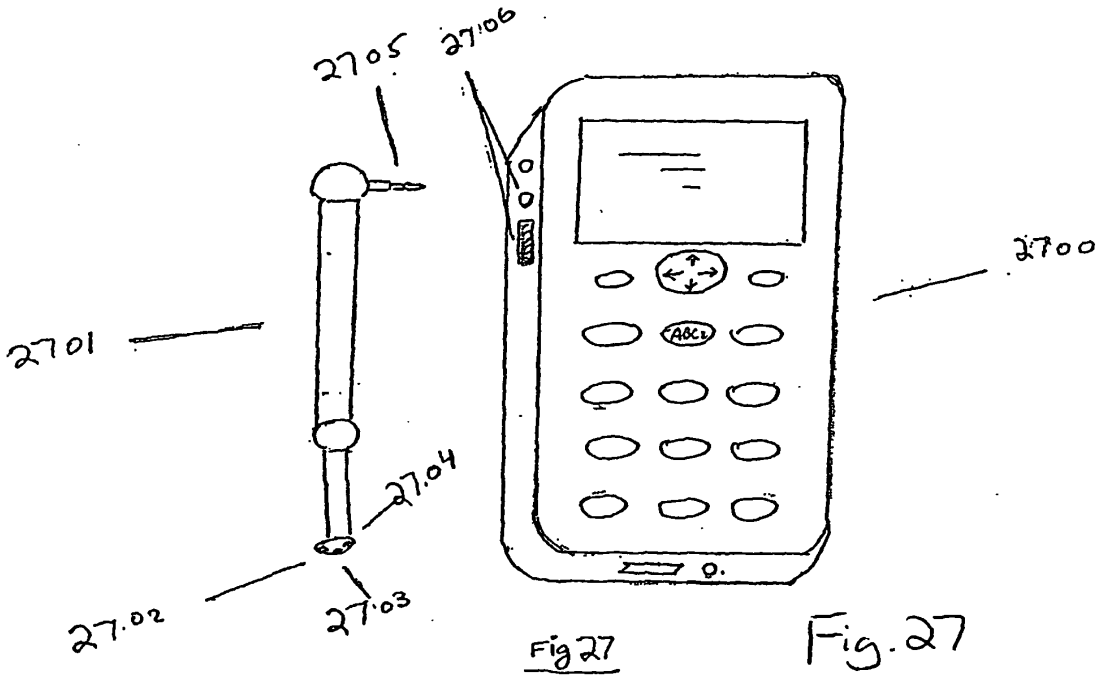


Fig 27

Fig. 27

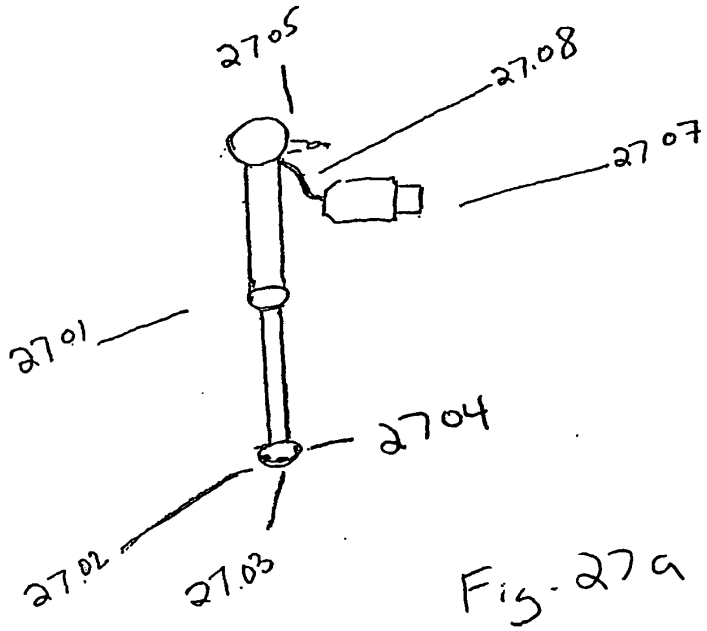


Fig. 27a

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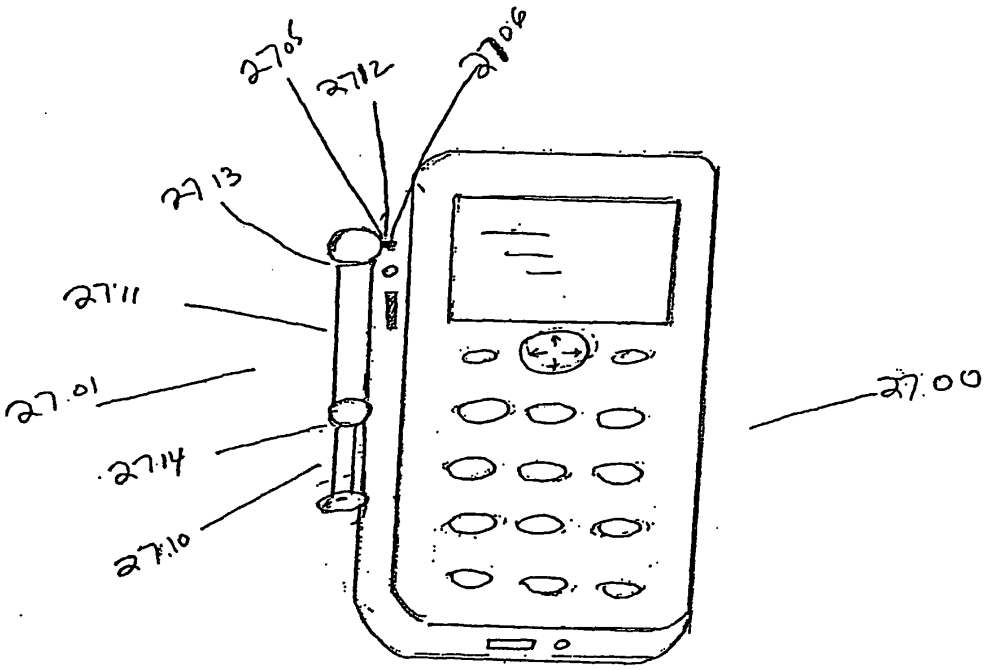


Fig27b

Fig. 27b

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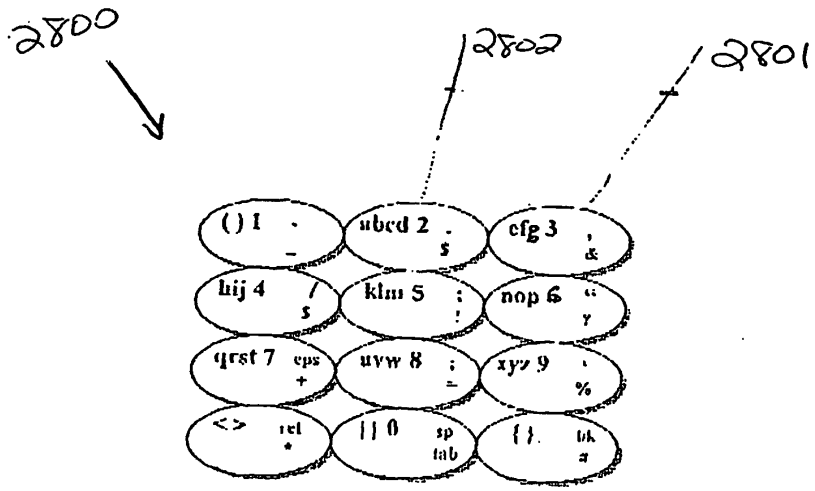


Fig. 28

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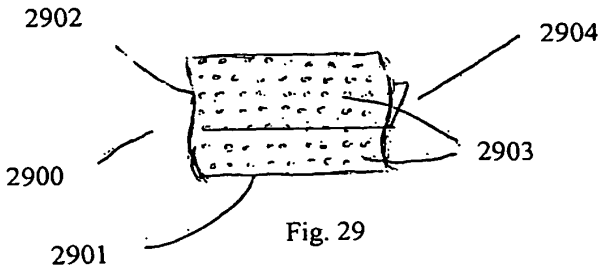
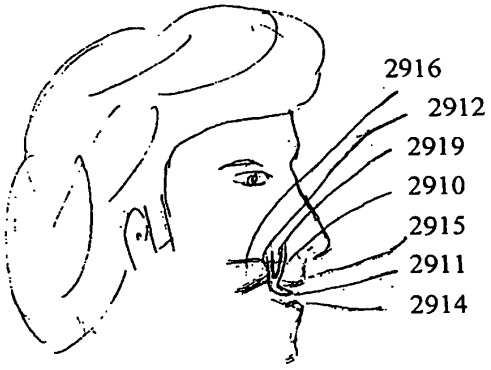


Fig. 29



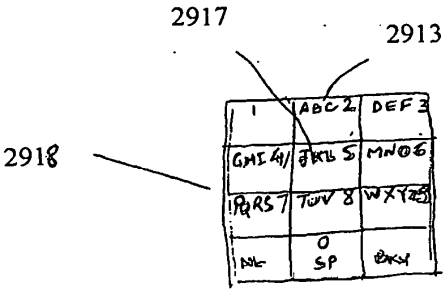


Fig. 29a

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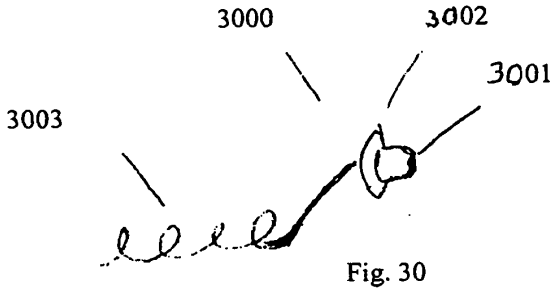


Fig. 30

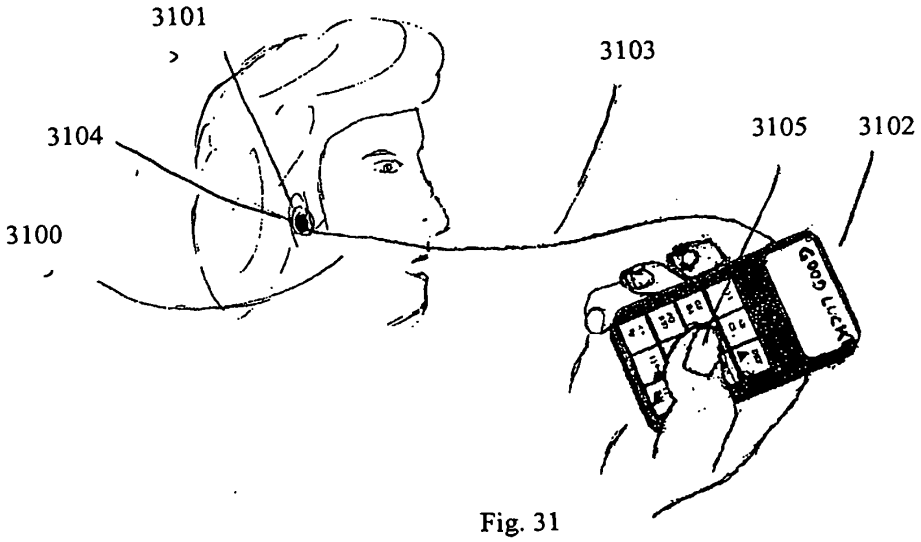


Fig. 31

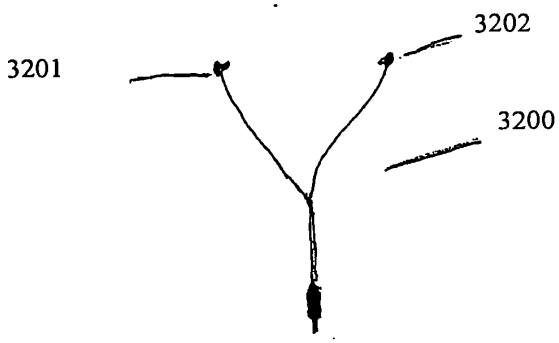


Fig. 32

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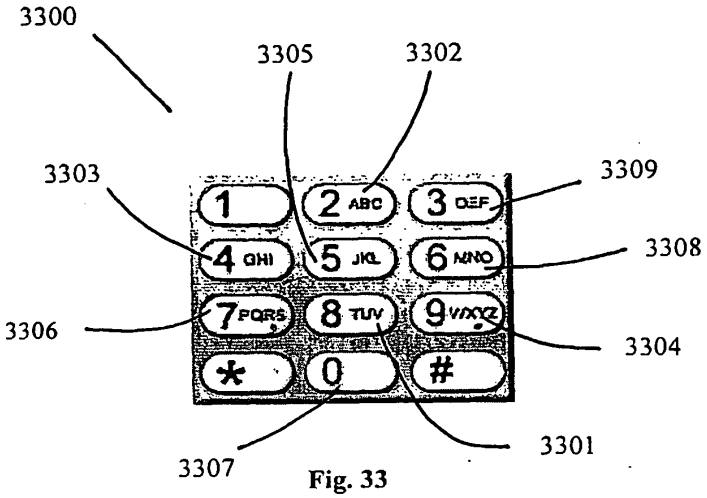
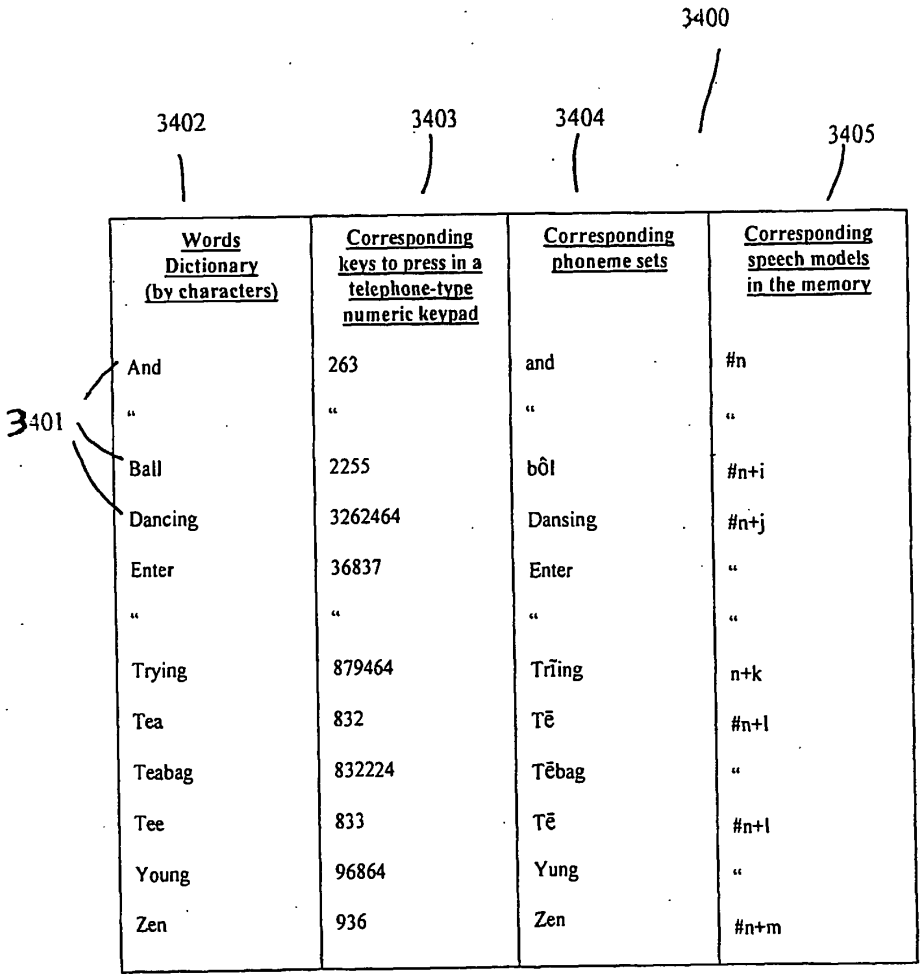


Fig. 33

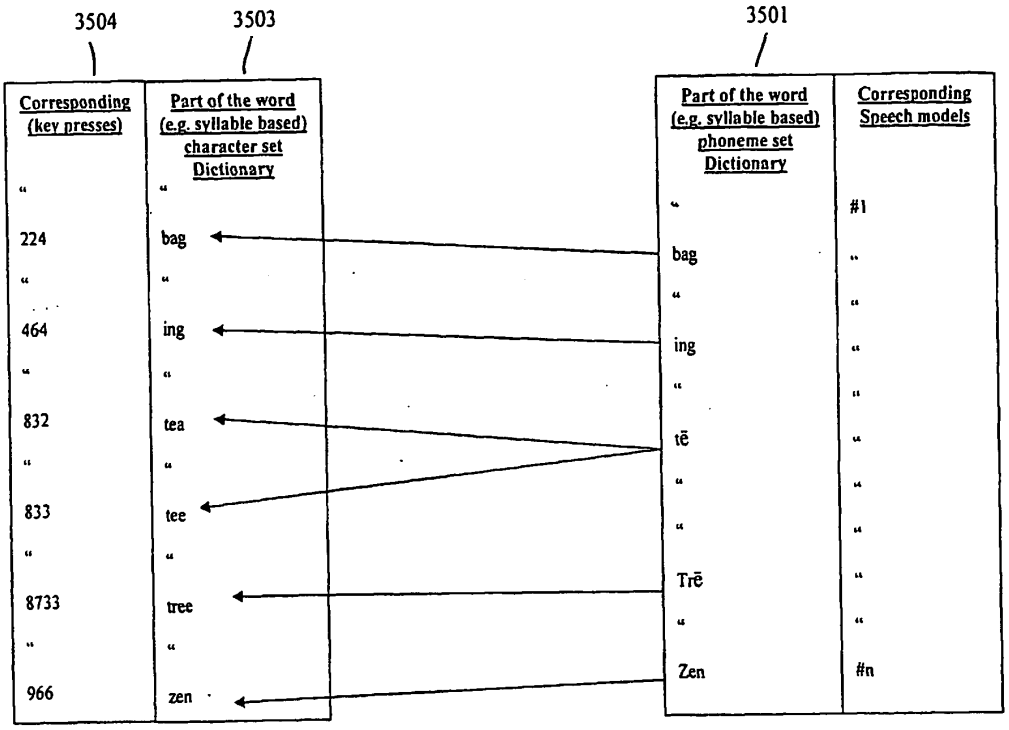
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Words Dictionary (by characters)	Corresponding keys to press in a telephone-type numeric keypad	Corresponding phoneme sets	Corresponding speech models in the memory
And	263	and	#n
"	"	"	"
Ball	2255	bôl	#n+i
Dancing	3262464	Dansing	#n+j
Enter	36837	Enter	"
"	"	"	"
Trying	879464	Trĩing	n+k
Tea	832	Tē	#n+l
Teabag	832224	Tēbag	"
Tee	833	Tē	#n+l
Young	96864	Yung	"
Zen	936	Zen	#n+m

Fig. 34

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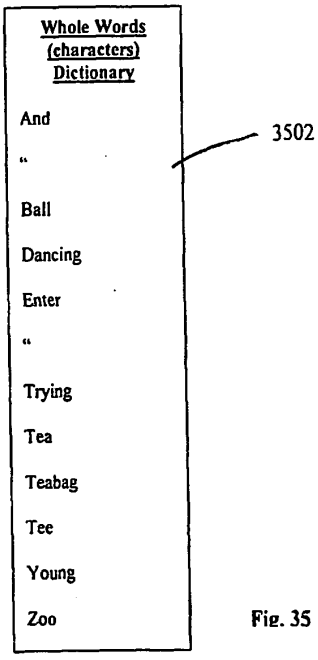


Fig. 35

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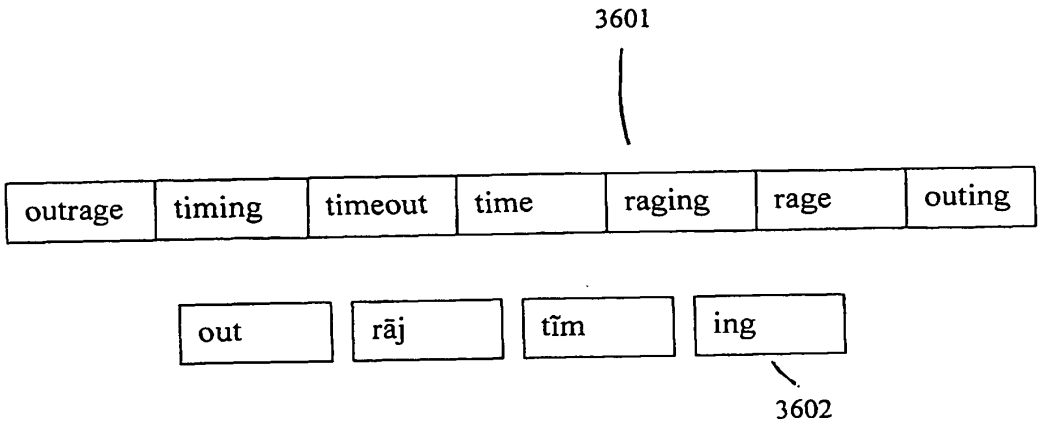


Fig. 36

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A Speech/phonemes at the beginning of a syllable in a word	B Characters sets having pronunciation at least substantially similar to the phonemes set of A	C words having portions (e.g. syllables) with starting: phoneme-sets of A or characters sets of B
ta	ta,	tap, tango
tā	ta, tai,	take, tailor
tā	tas,	taste
tô	ta, tau	talk, taupe
top	top	Top
te	te	tent
ti	ti	tilt
tip	tip	tippet
tī	ti, tie, ty	re-tire ("ti" in the beginning of the middle syllable), tiebreak, type
tē	t, tee, tea, ty	t, teeth, team, security
tōō	to, too, two	to, tooth, two
trī	tri, try	tried, re-try
thi	thi, thir, thirst	thin, thirst, thirst
thrō	thro	throw
ing	in	trying

Fig. 37

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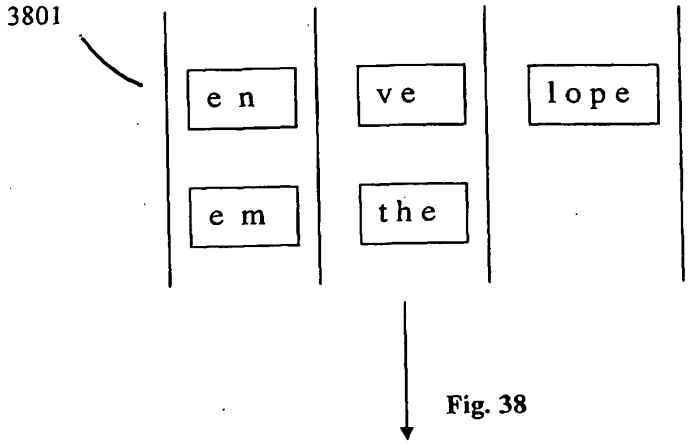


Fig. 38

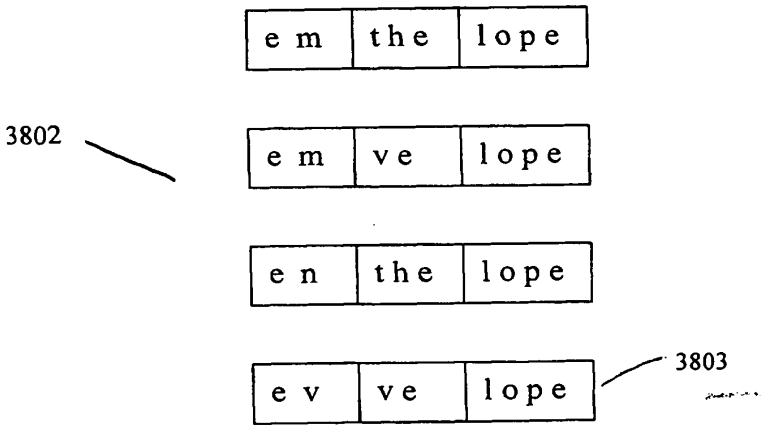


Fig. 39

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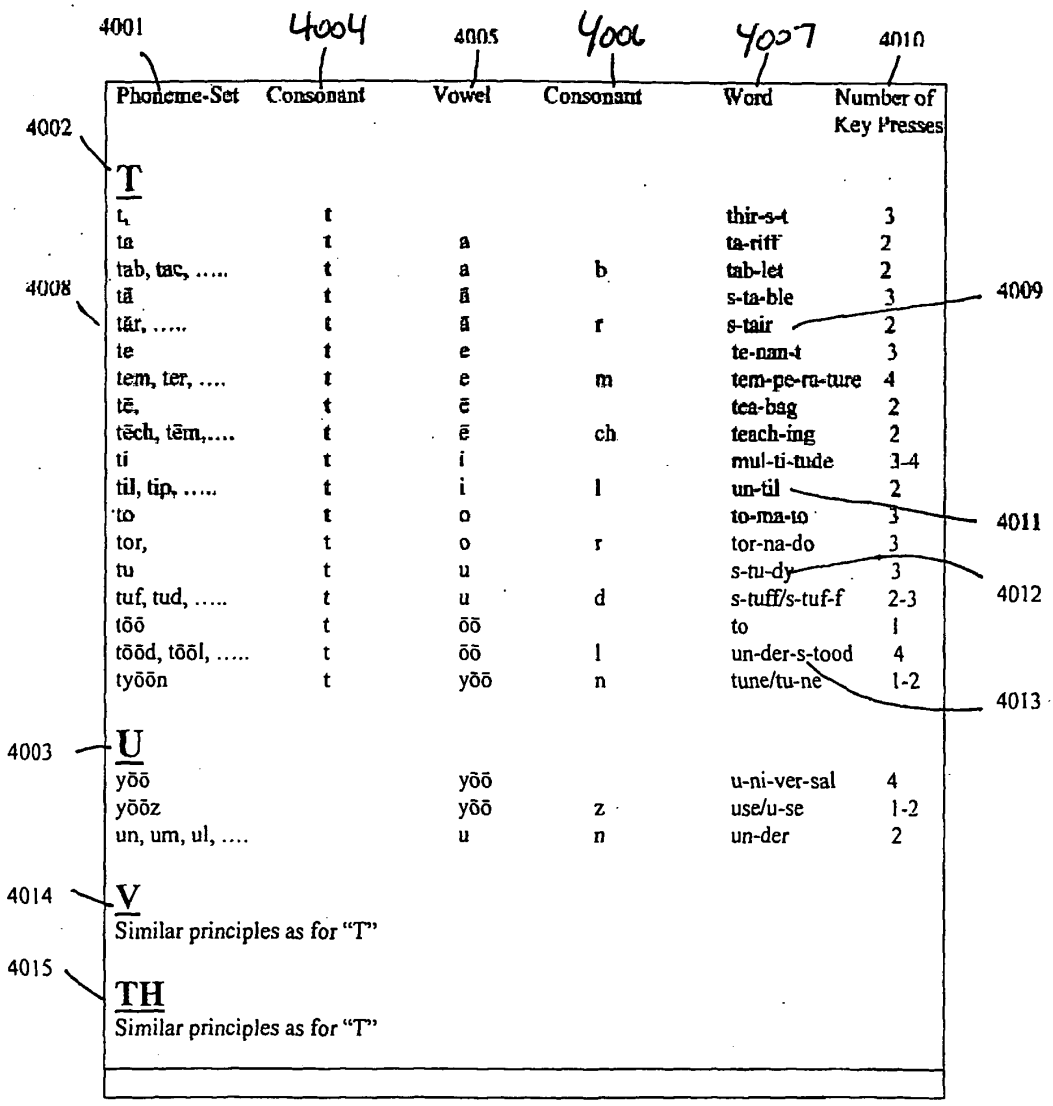


Fig. 40

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Phoneme-Set	Consonant	Vowel	Word	Number of Key Pressees
T				
t	t		thi-r-s-t	4
ta	t	a	ta-ri-f-f	4
tā	t	ā	s-ta-b-le	4
te	t	e	te-na-n-t	4
tē,	t	ē	tea-ba-g	3
ti	t	i	mu-l-ti-tu-de	5
to	t	o	to-ma-to	3
tu	t	u	s-tu-dy	3
tōō	t	ōō	to	1
tyōō	t	yōō	tu-ne	2
U	vowel	consonant		
yōōz	yōō		u-se	2
un, um, ul, ...	u	n	un-de-r	3
V				
Similar principles as for "T"				
TH				
Similar principles as for "T"				

4101

Fig. 41

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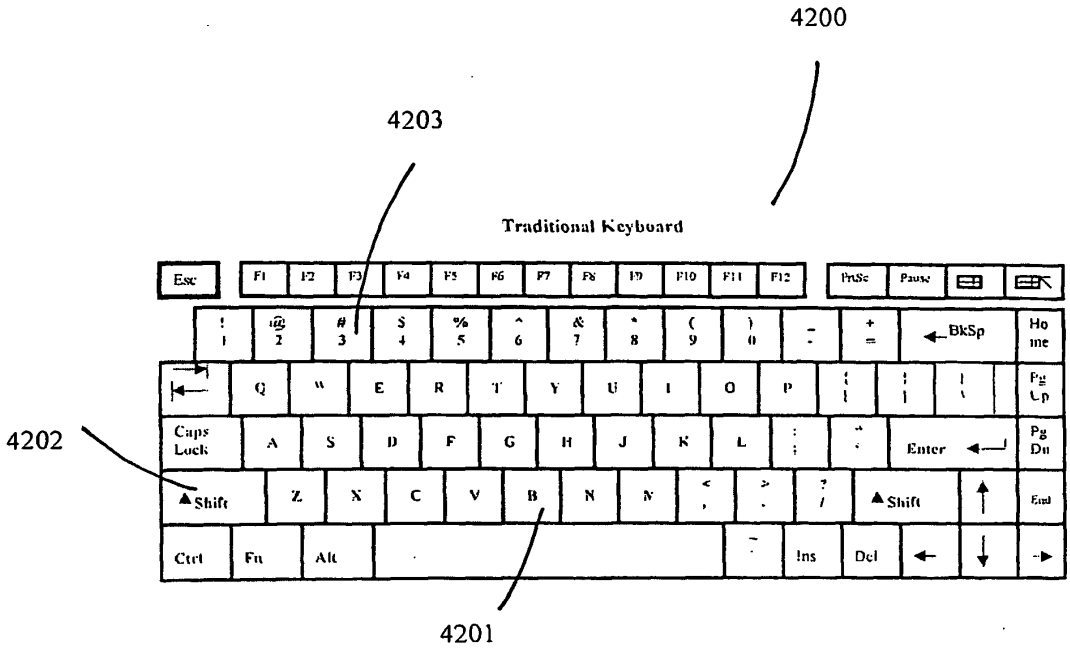


Fig. 42

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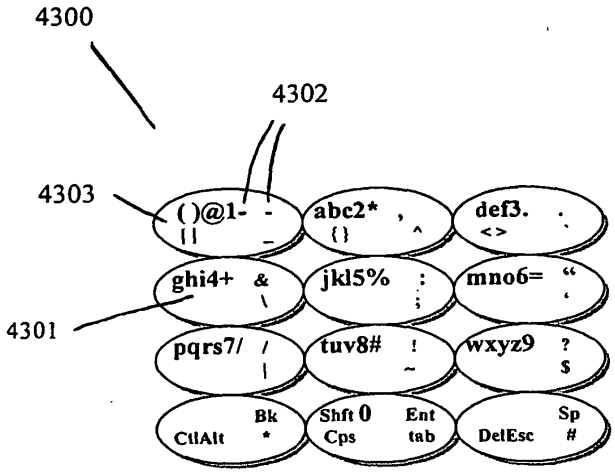


Fig. 43

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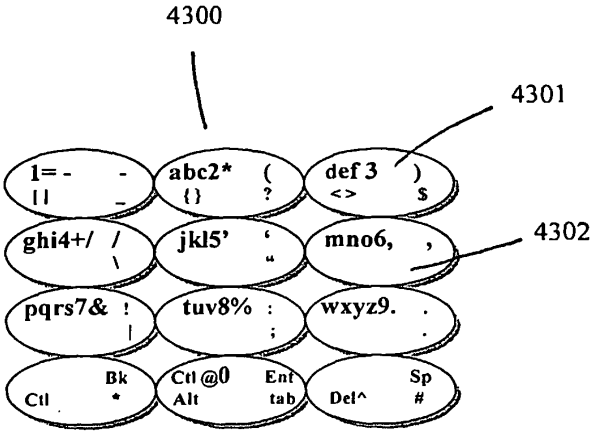


Fig. 43a

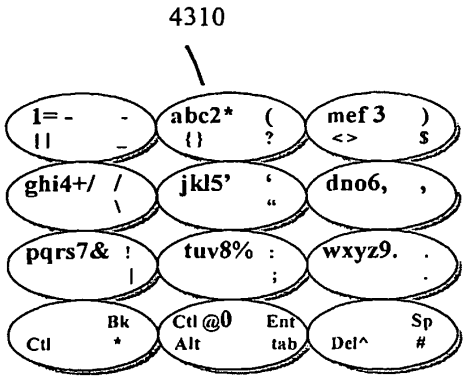


Fig. 43b

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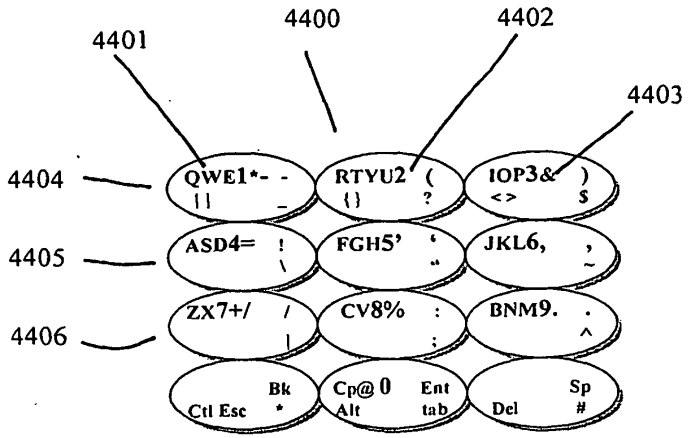


Fig. 44a

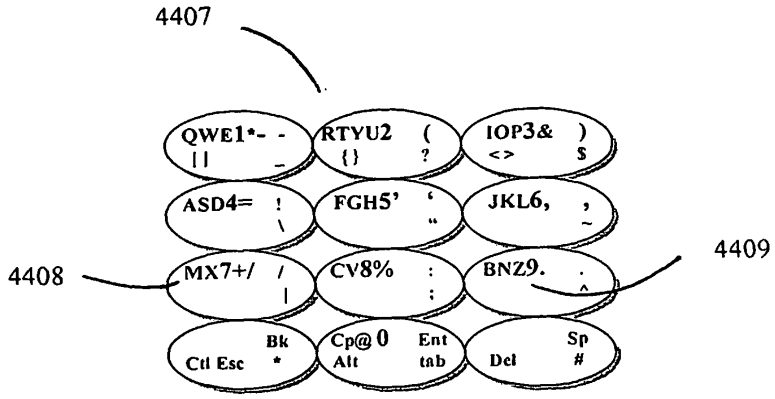


Fig. 44b

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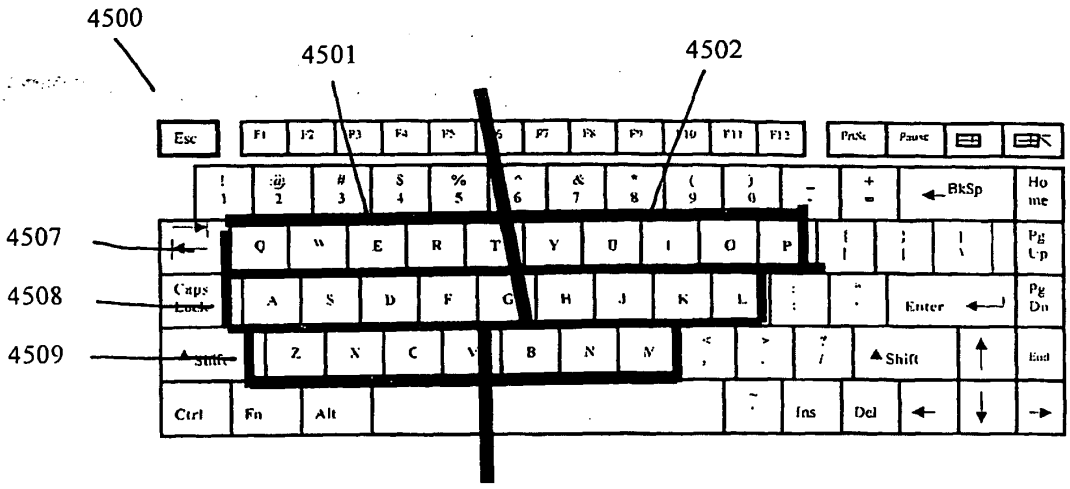


Fig. 45

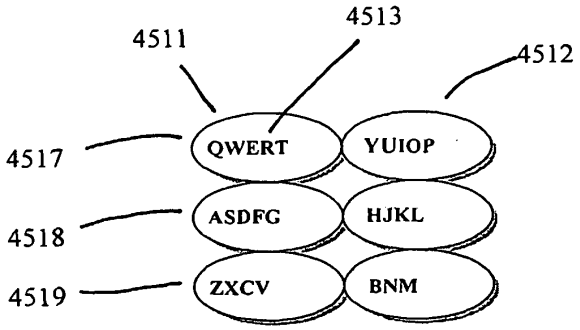


Fig. 45a

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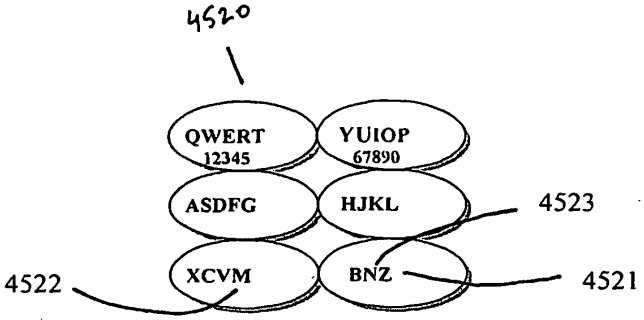


Fig. 45b

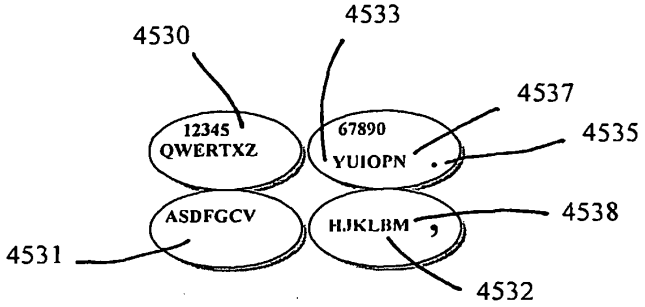


Fig. 45c



Fig. 45d

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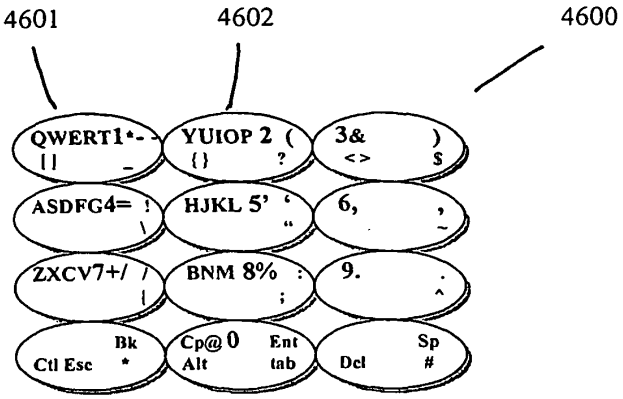


Fig. 46a

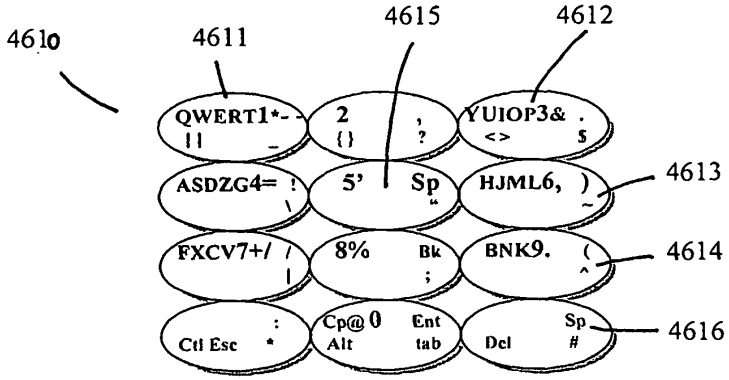


Fig. 46b

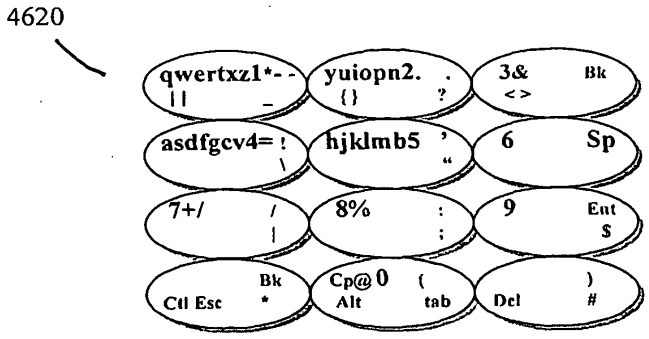


Fig. 46c

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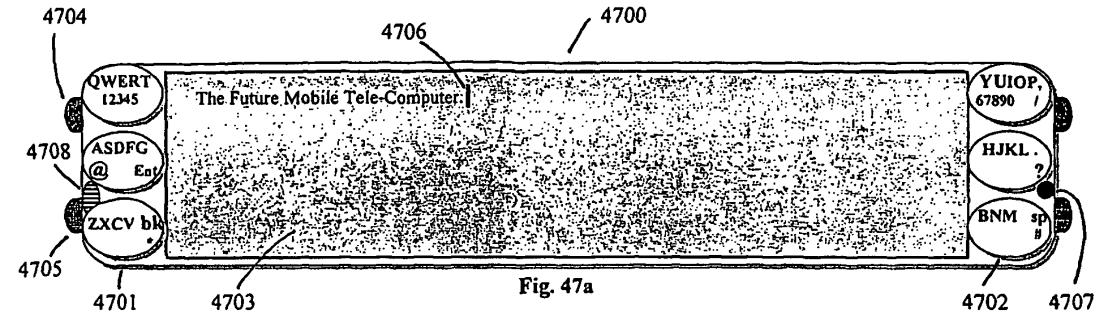


Fig. 47a

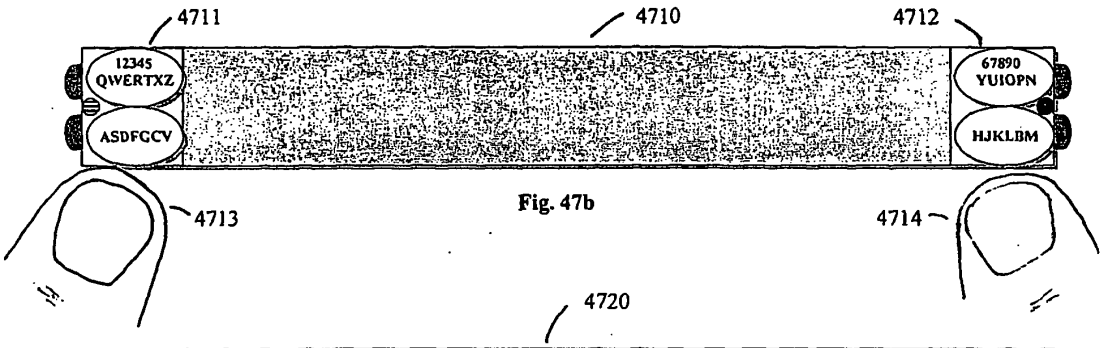


Fig. 47b

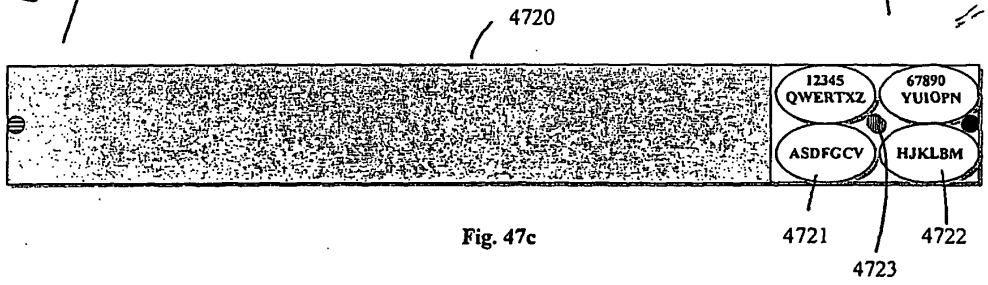


Fig. 47c

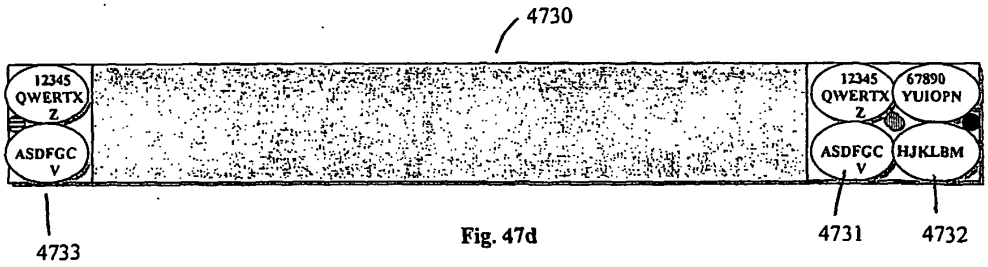


Fig. 47d

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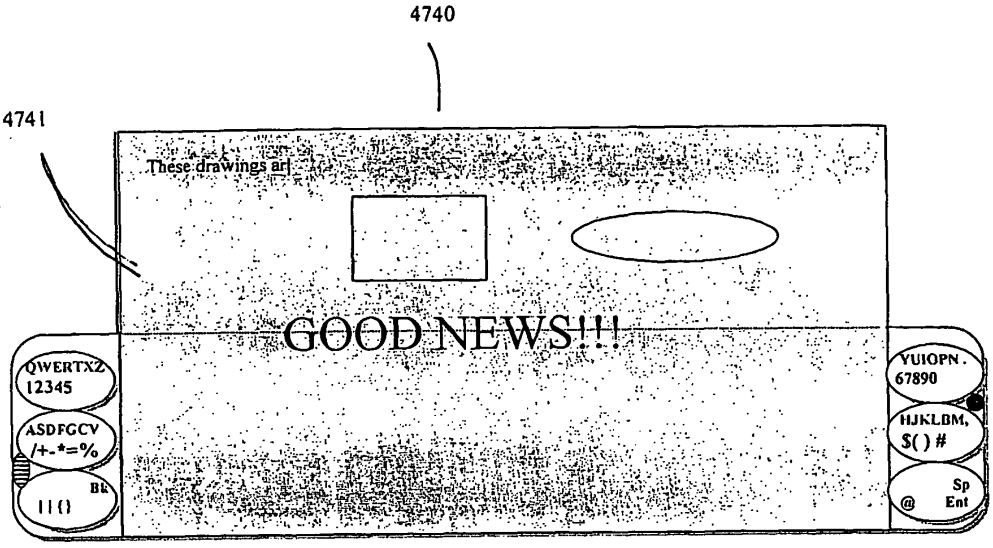


Fig. 47e

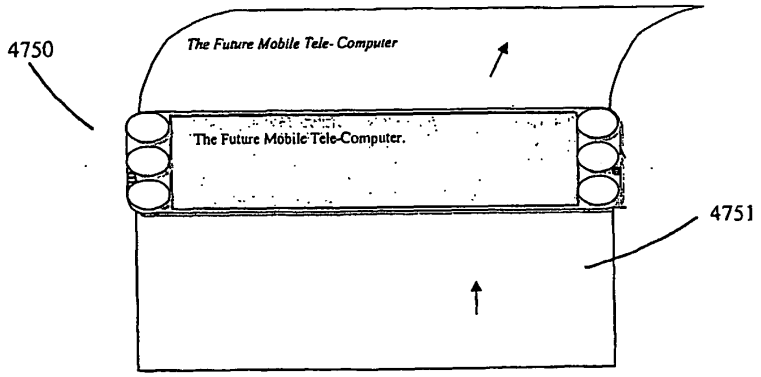


Fig. 47f

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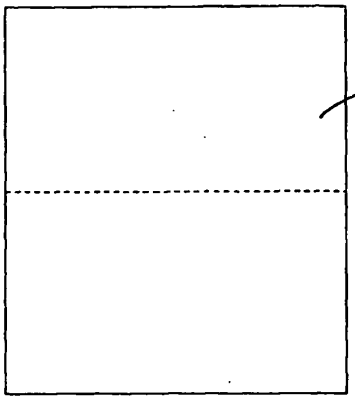


Fig. 47g

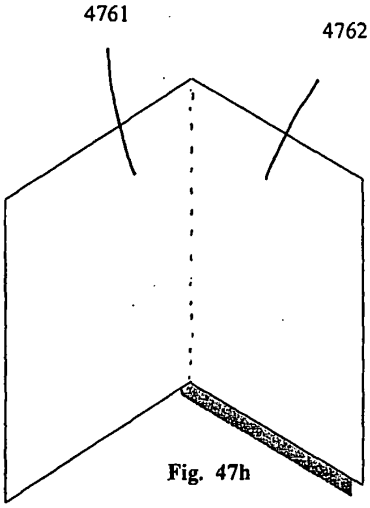


Fig. 47h

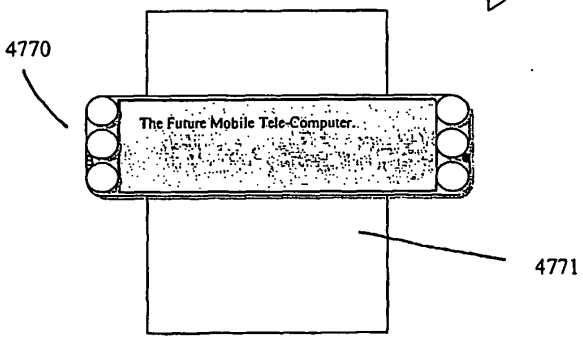


Fig. 47i

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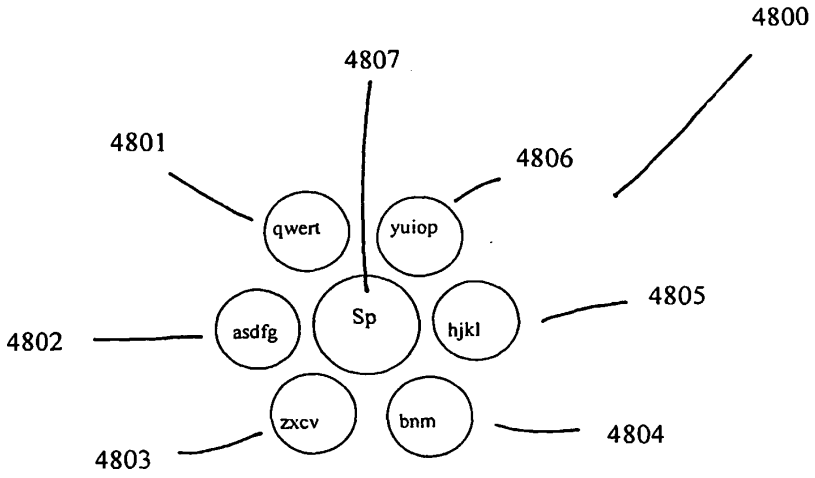


Fig. 48

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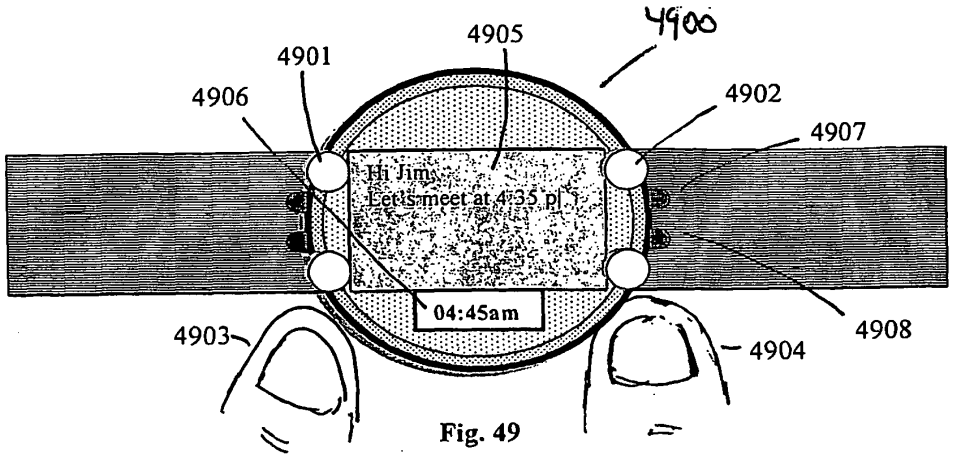


Fig. 49

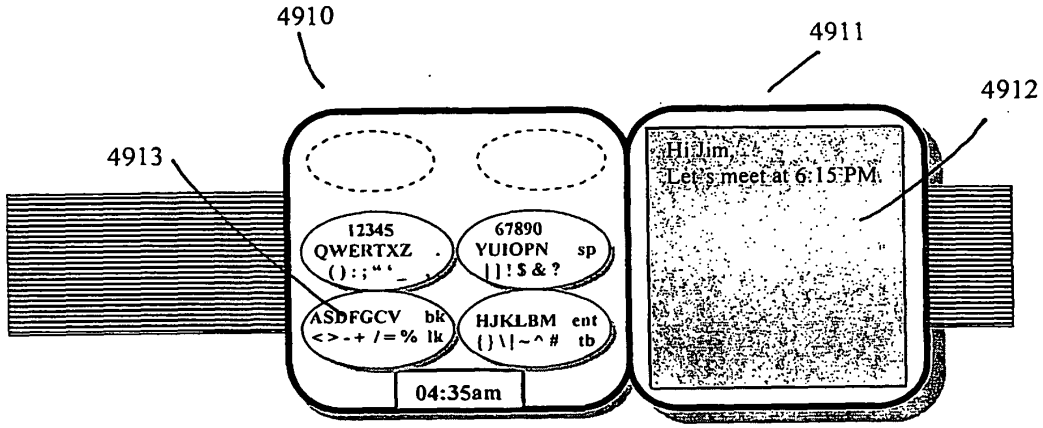


Fig. 49a

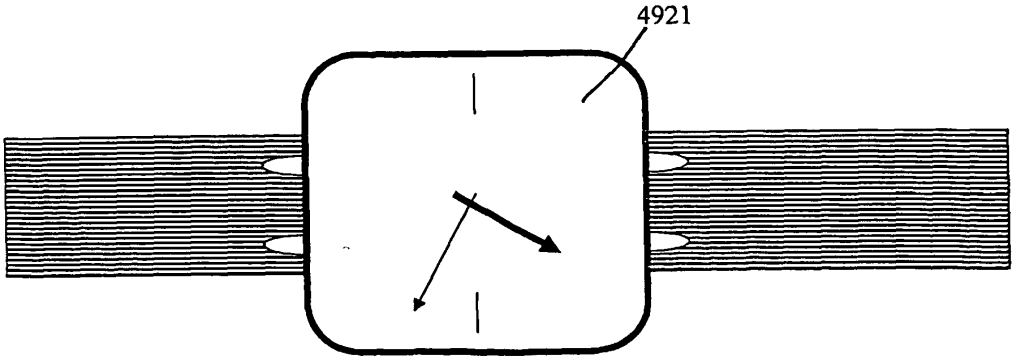


Fig. 49b

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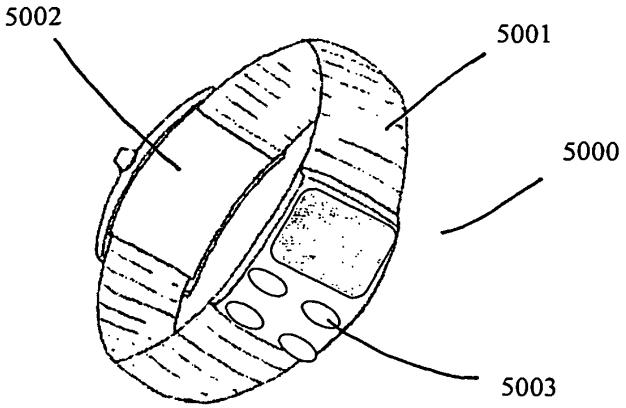


Fig. 50a

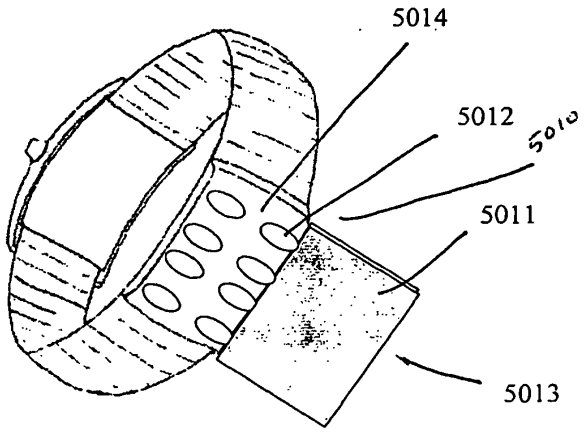


Fig. 50b

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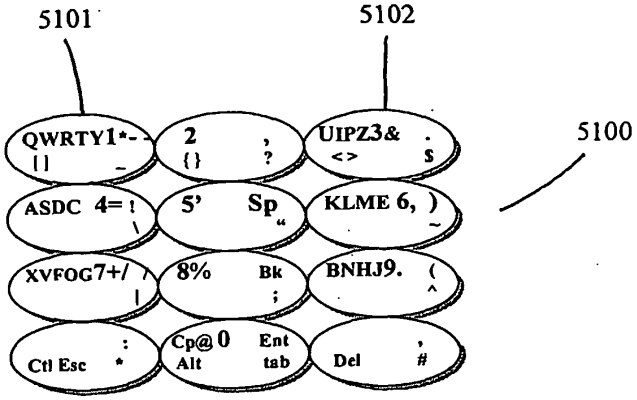


Fig. 51

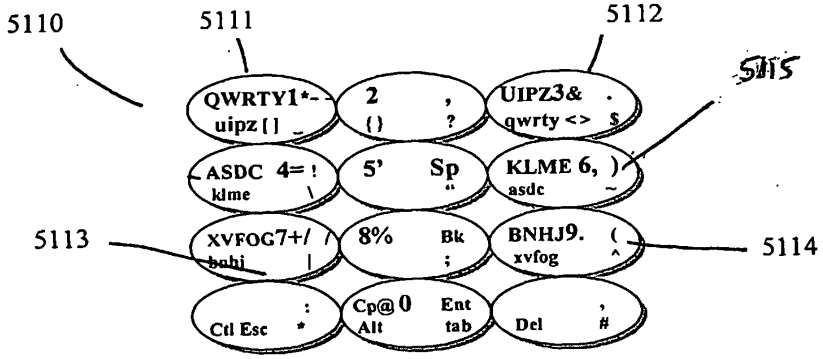


Fig. 51a

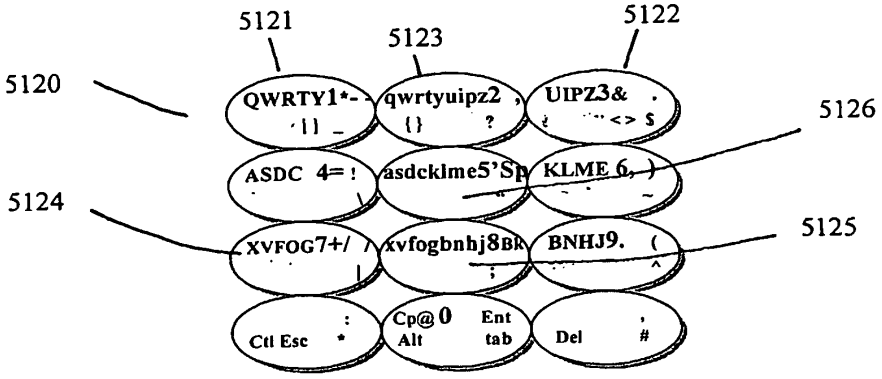


Fig. 51b

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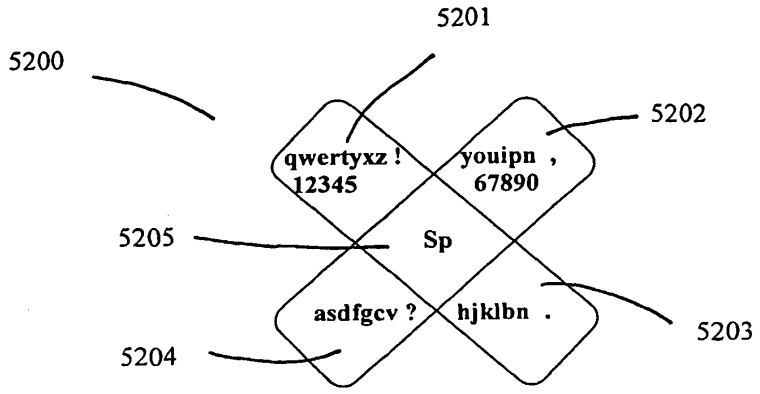


Fig. 52

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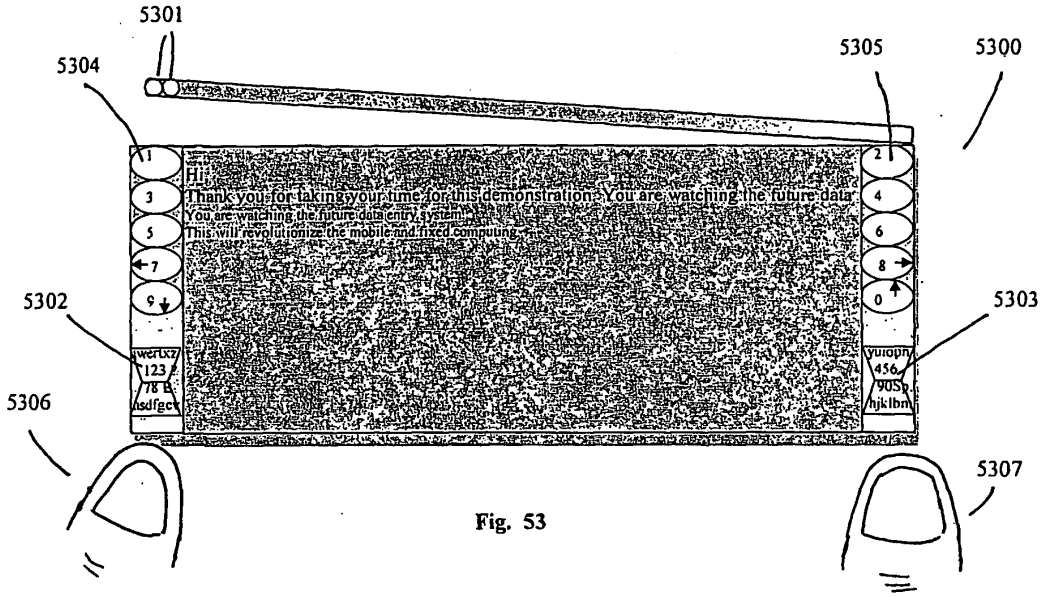


Fig. 53

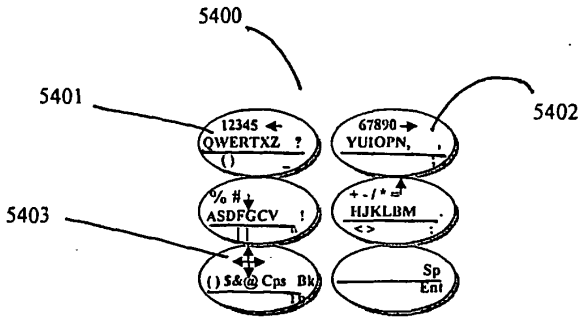


Fig. 54

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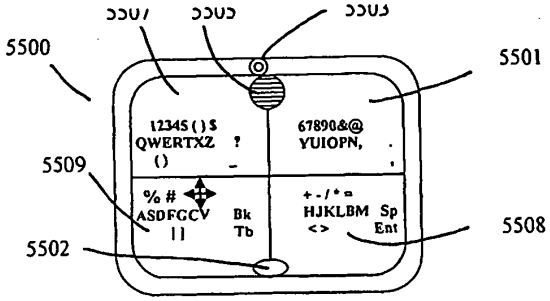


Fig. 55a

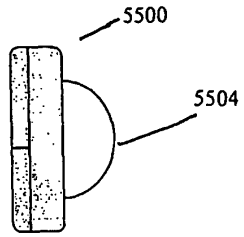


Fig. 55b

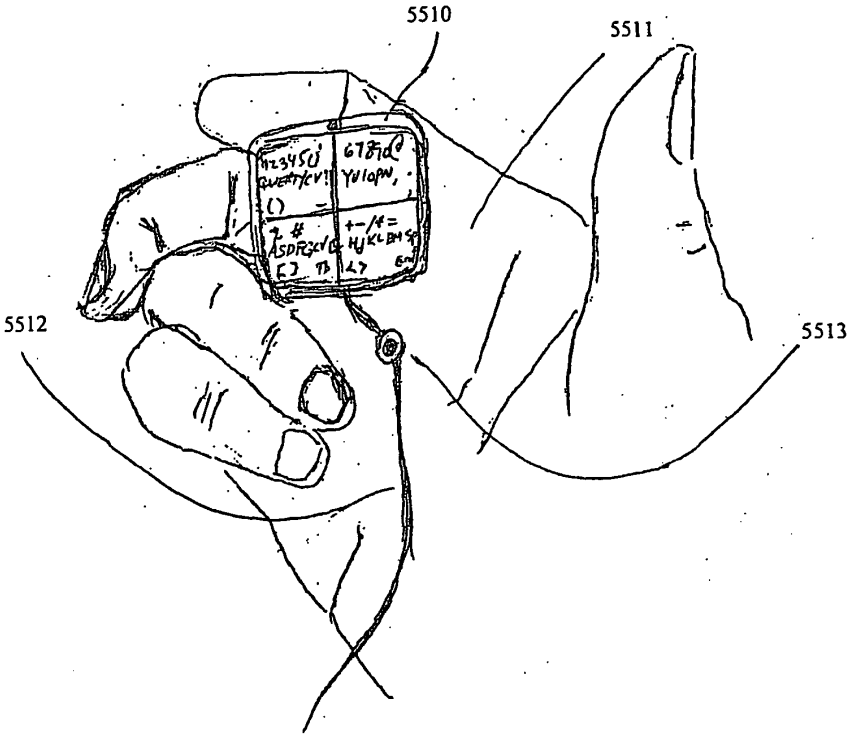


Fig. 55c

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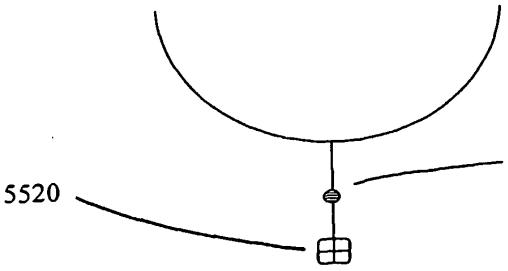


Fig. 55d

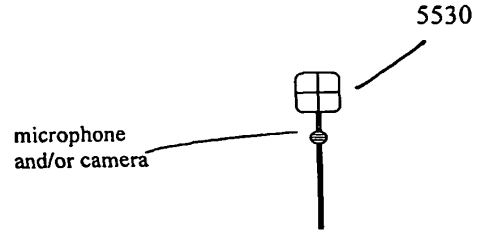


Fig. 55e

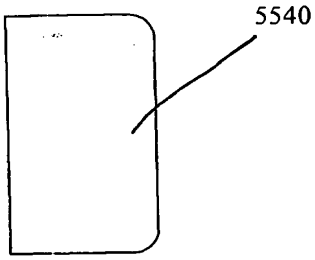


Fig. 55f

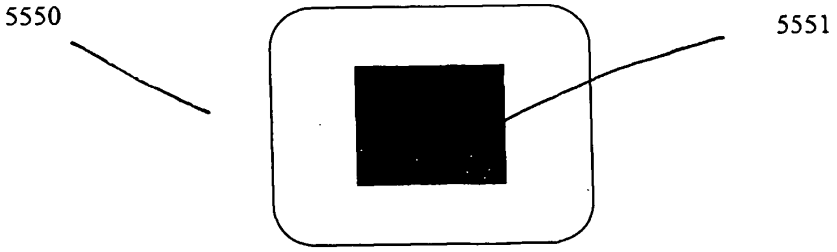


Fig. 55g

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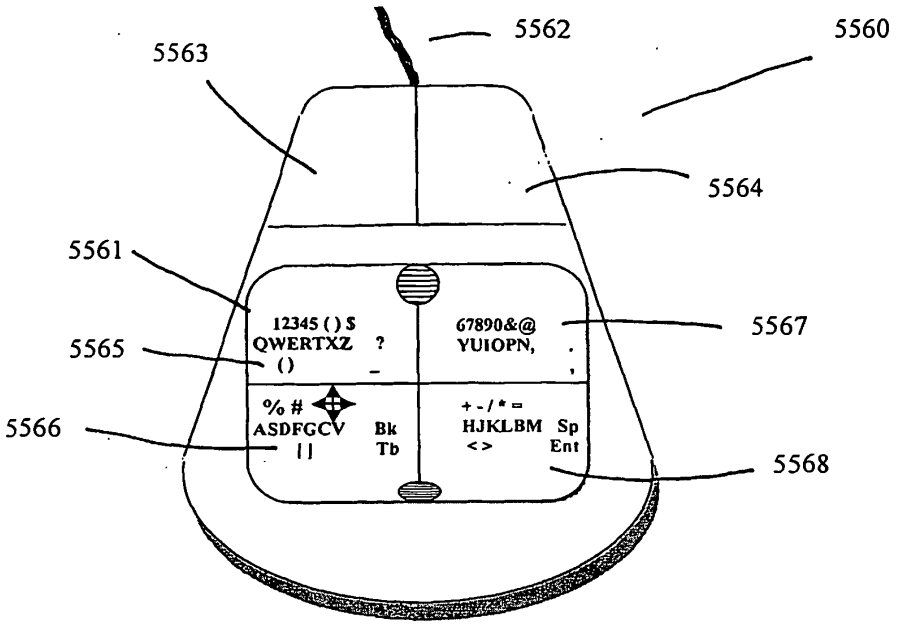


Fig. 55h

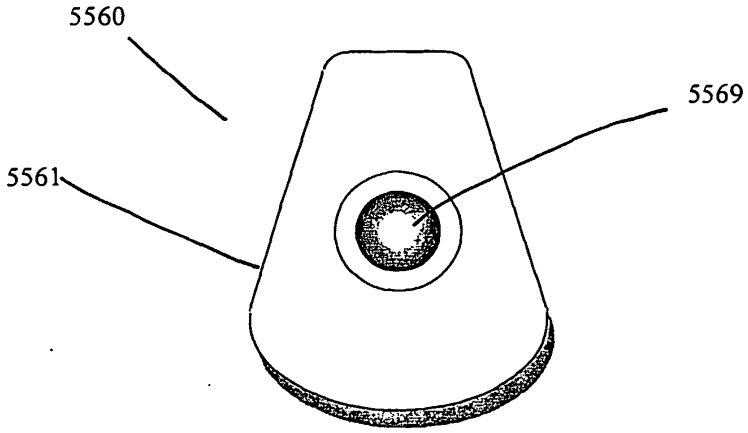


Fig. 55i

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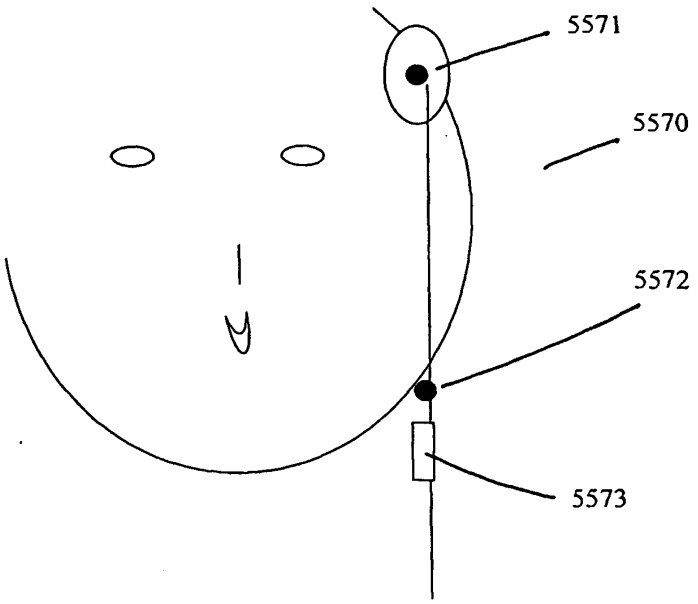


Fig. 55j

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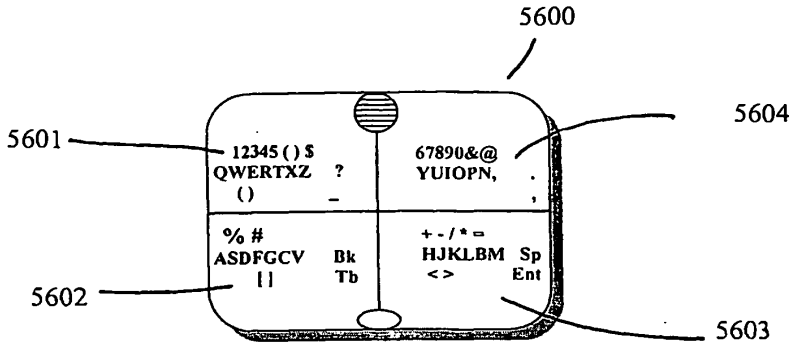


Fig. 56

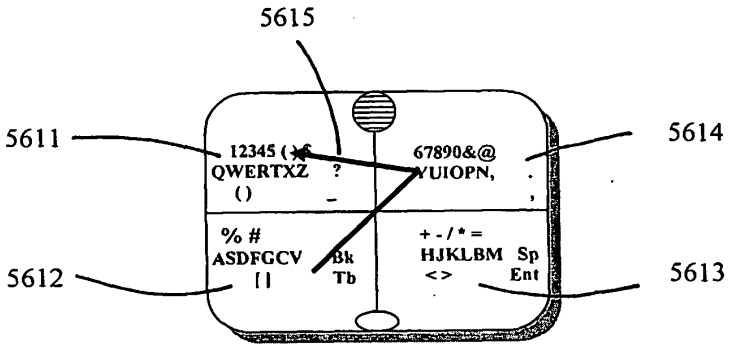


Fig. 56a

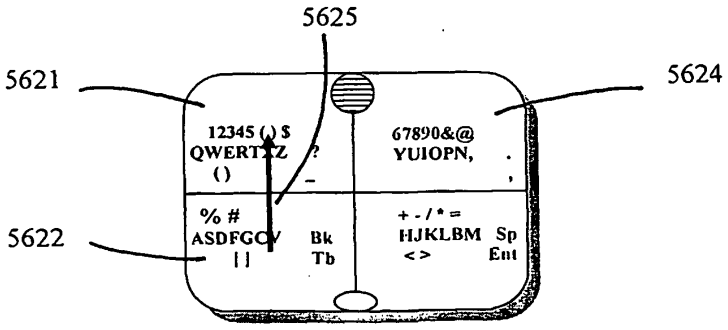


Fig. 56b

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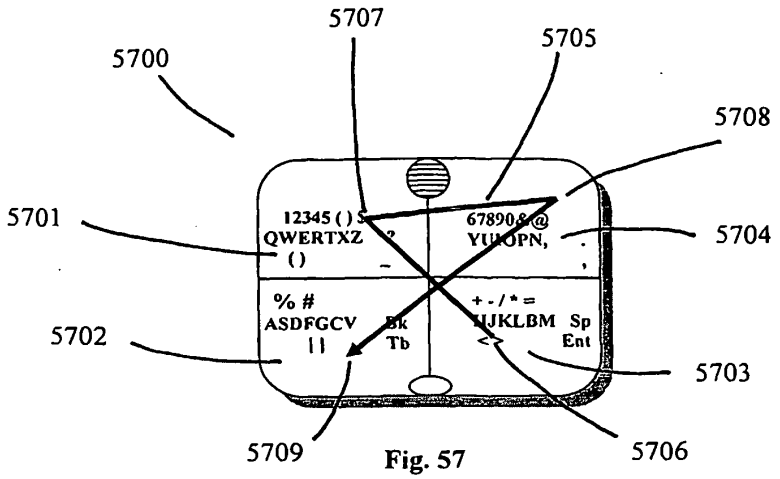


Fig. 57

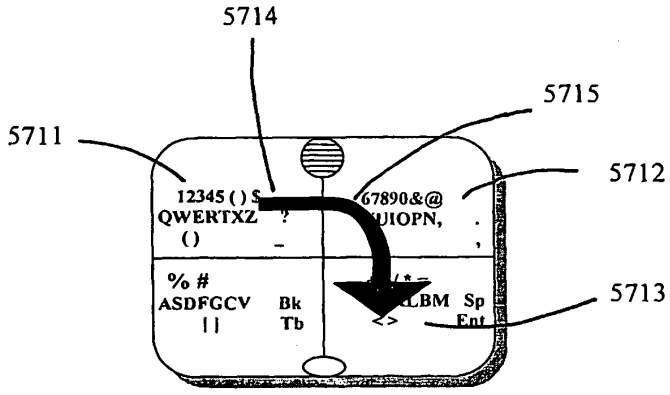


Fig. 57a

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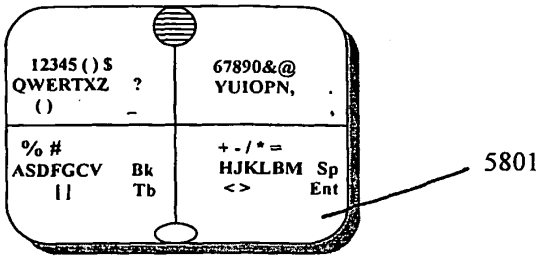


Fig. 58a

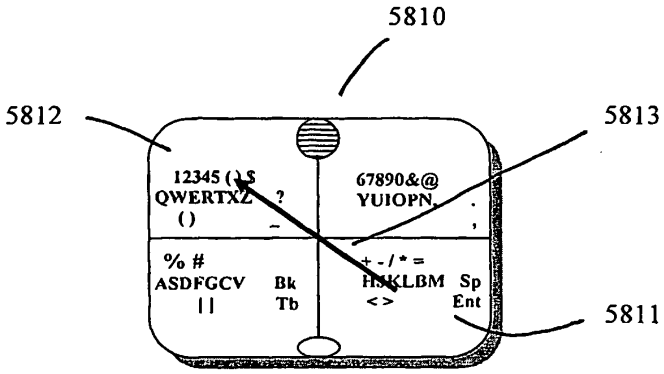


Fig. 58b

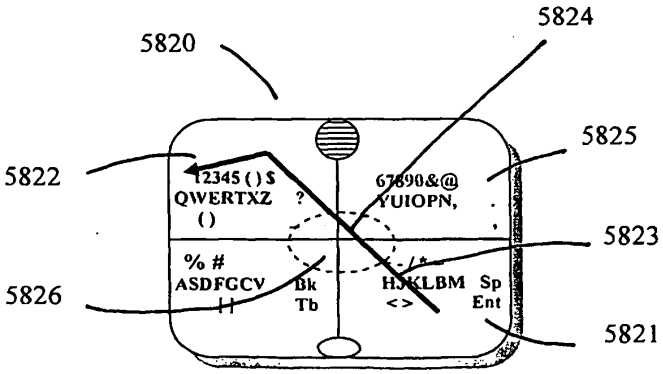


Fig. 58c

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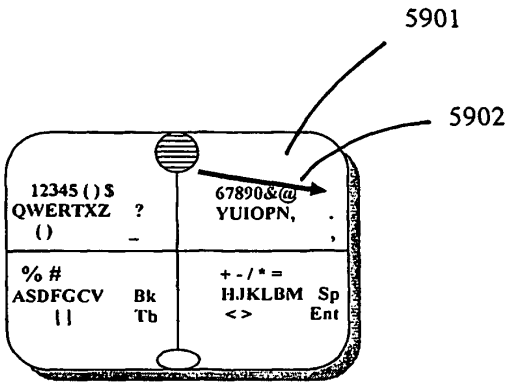


Fig. 59a

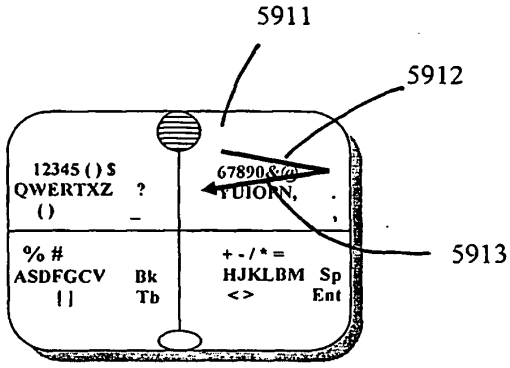


Fig. 59b

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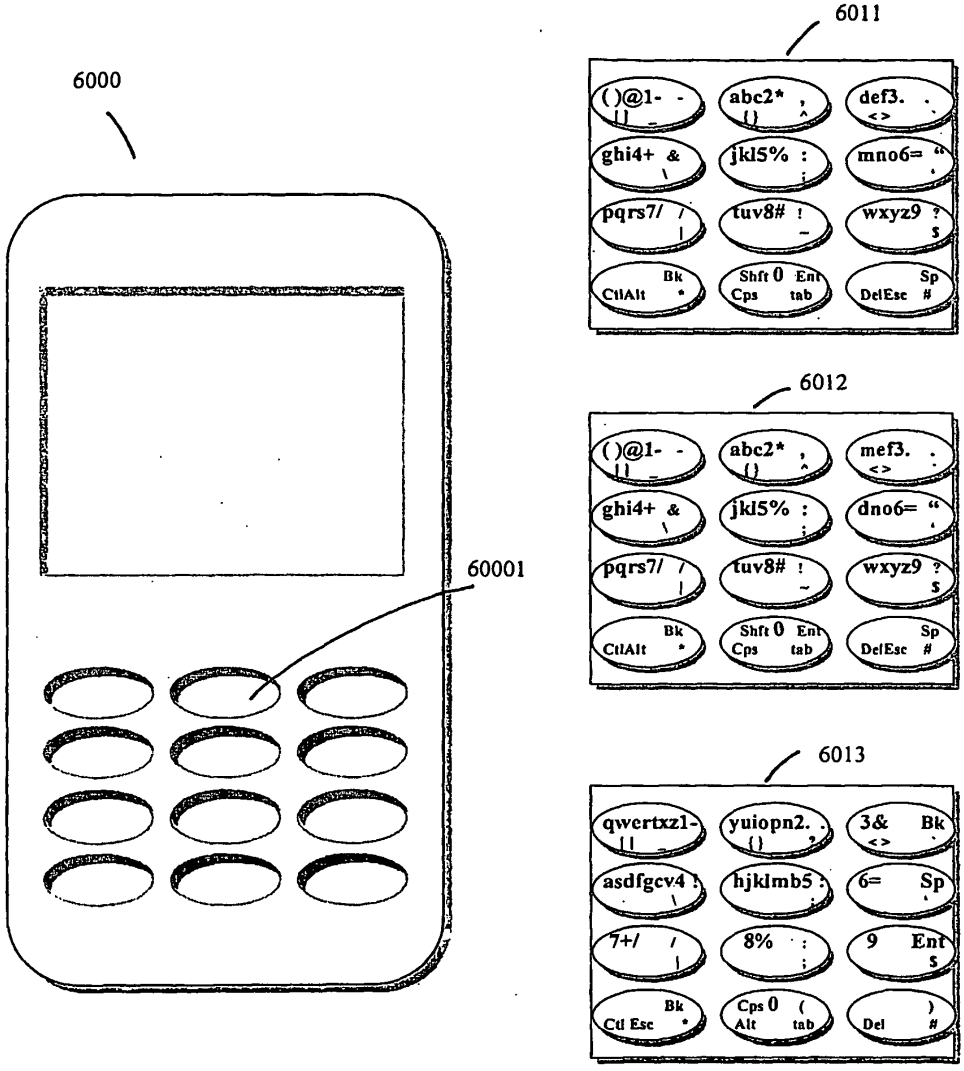


Fig. 60

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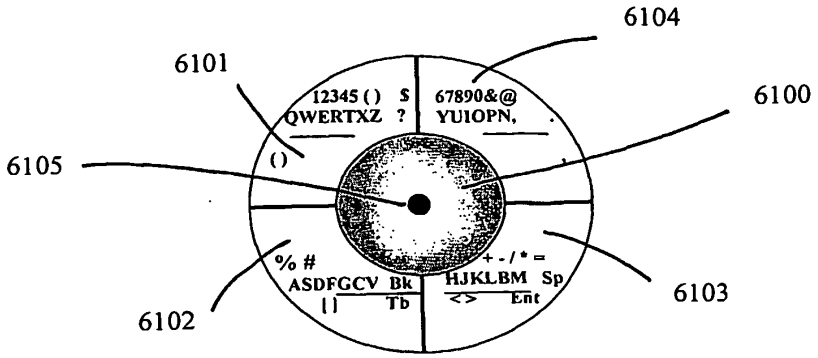


Fig. 61a

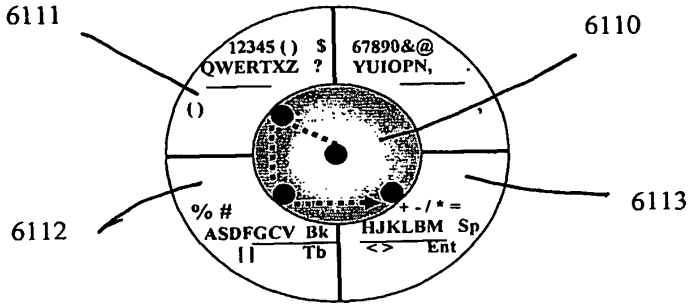


Fig. 61b

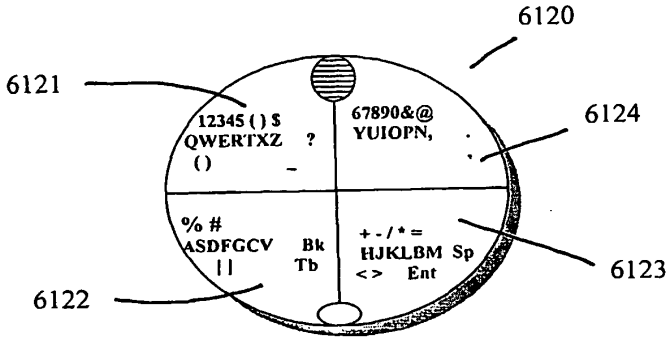


Fig. 61c

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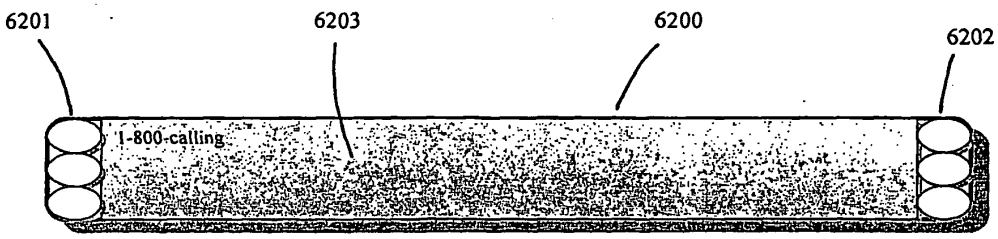


Fig. 62a

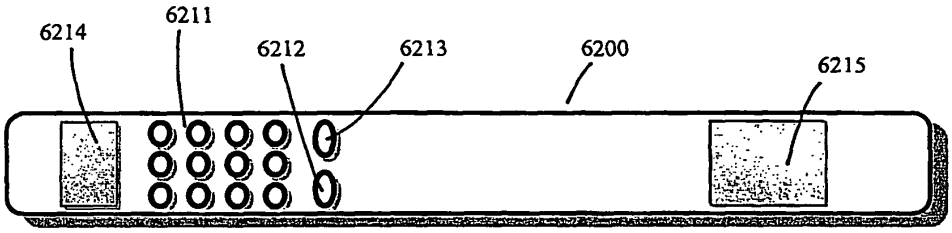


Fig. 62b

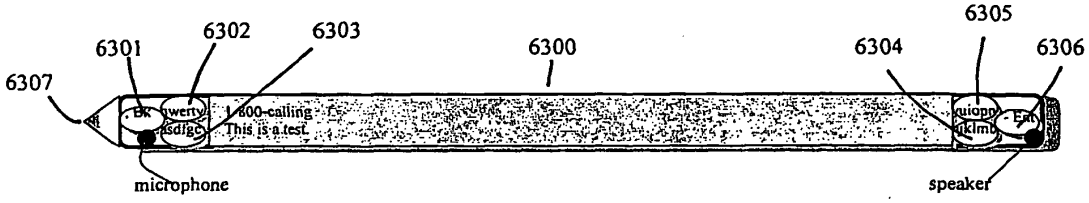


Fig. 63a

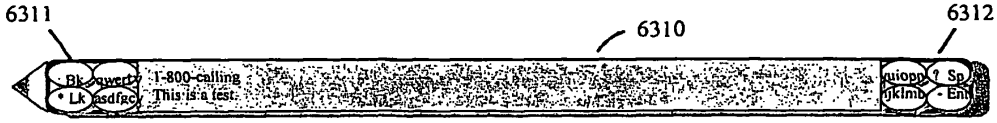


Fig. 63b

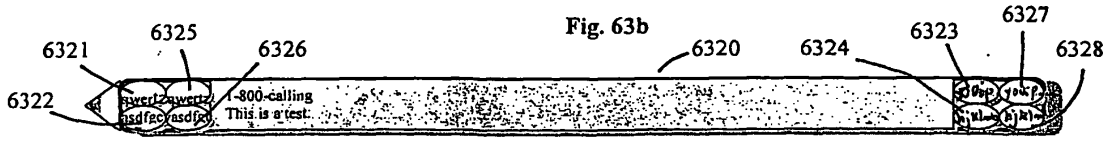


Fig. 63c

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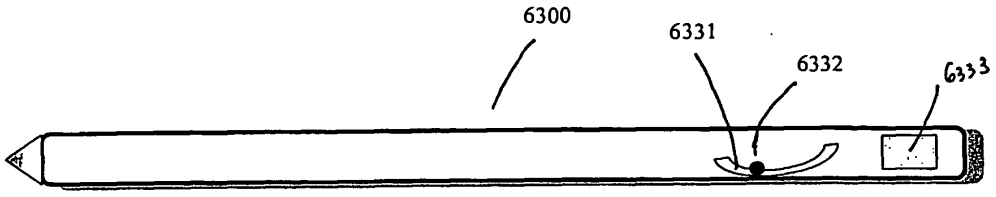


Fig. 63d

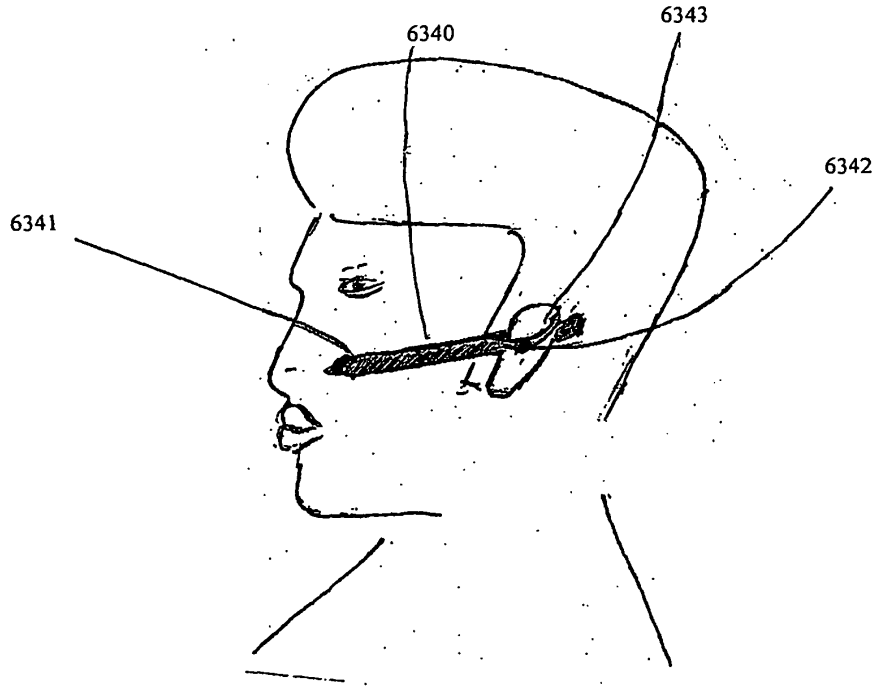


Fig. 63e

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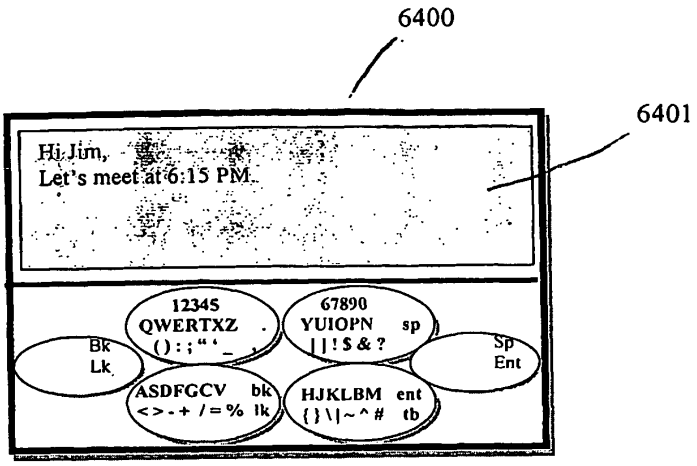


Fig. 64a

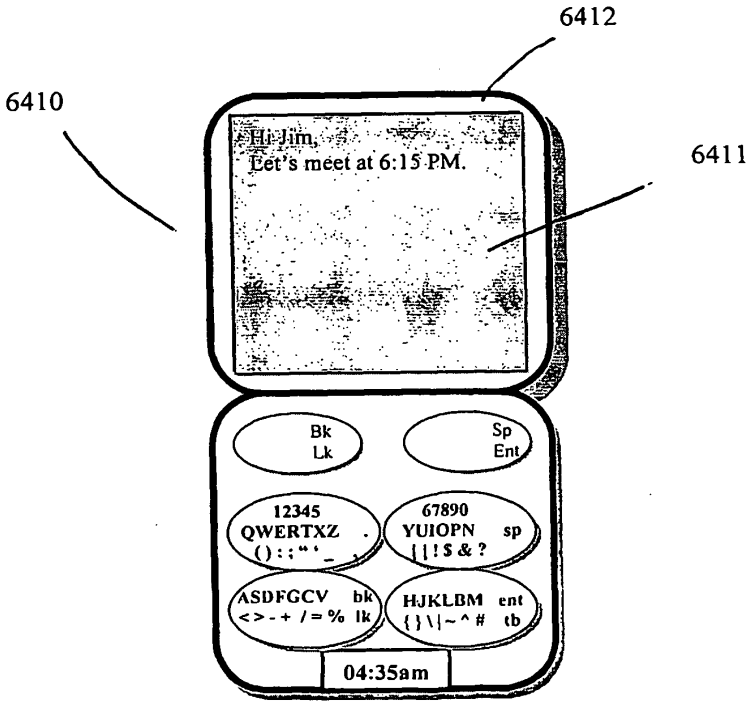


Fig. 64b

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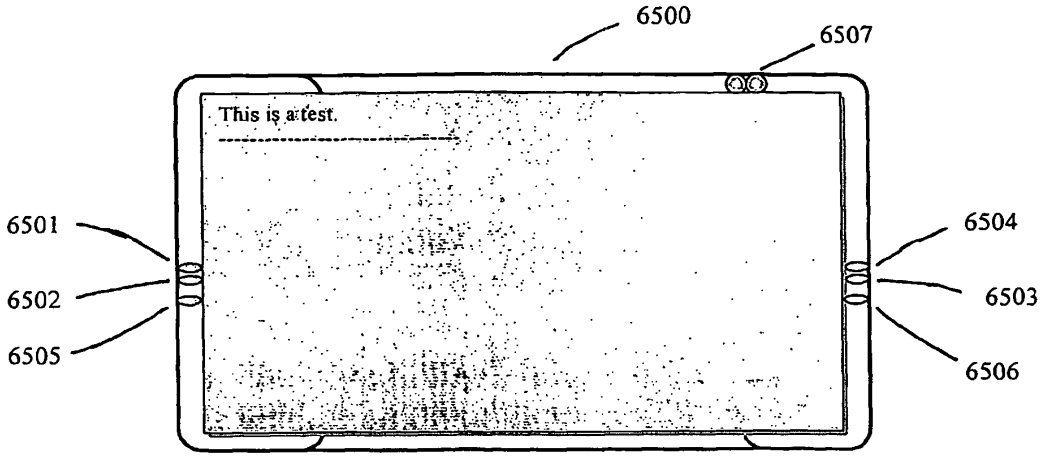


Fig. 65a

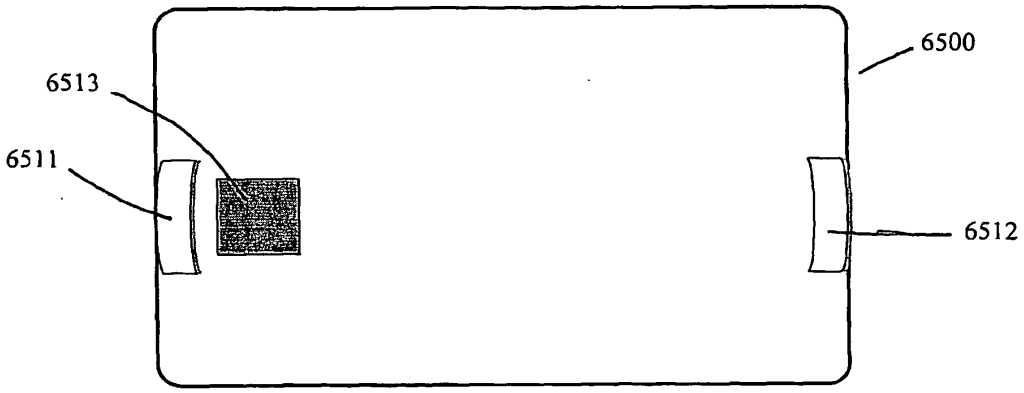


Fig. 65b

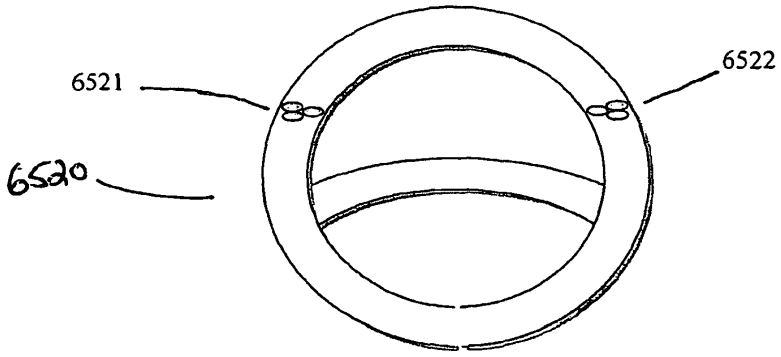


Fig. 65c

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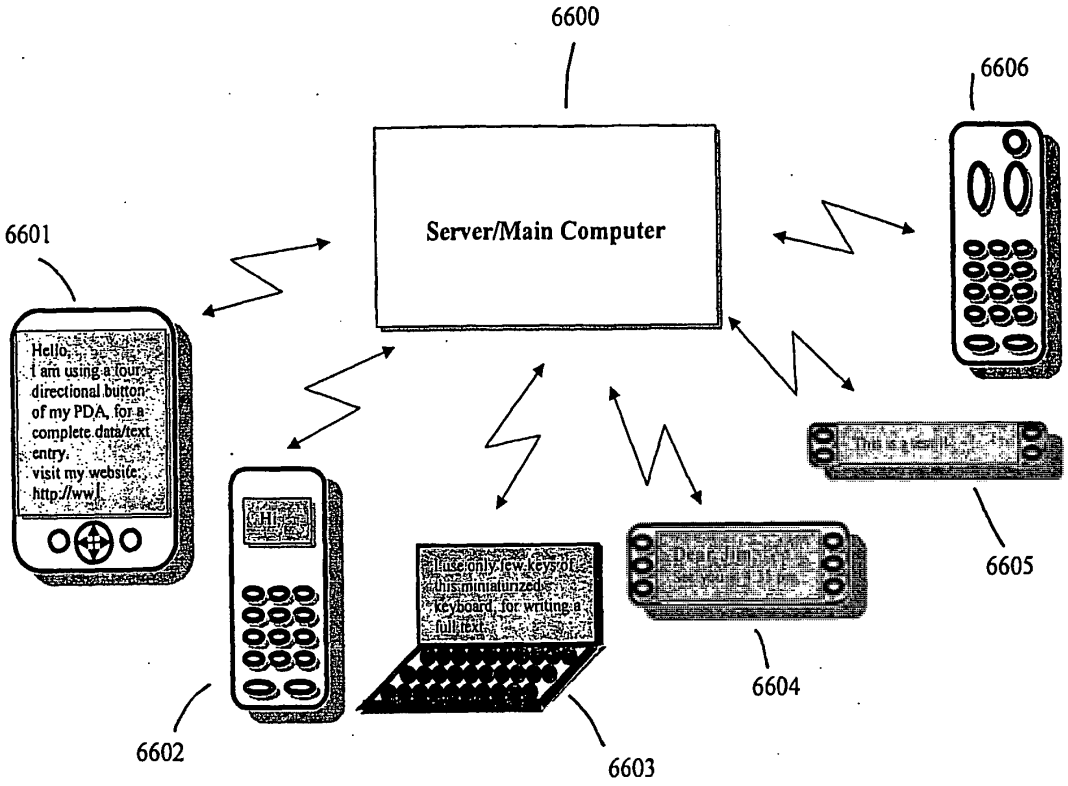


Fig. 66

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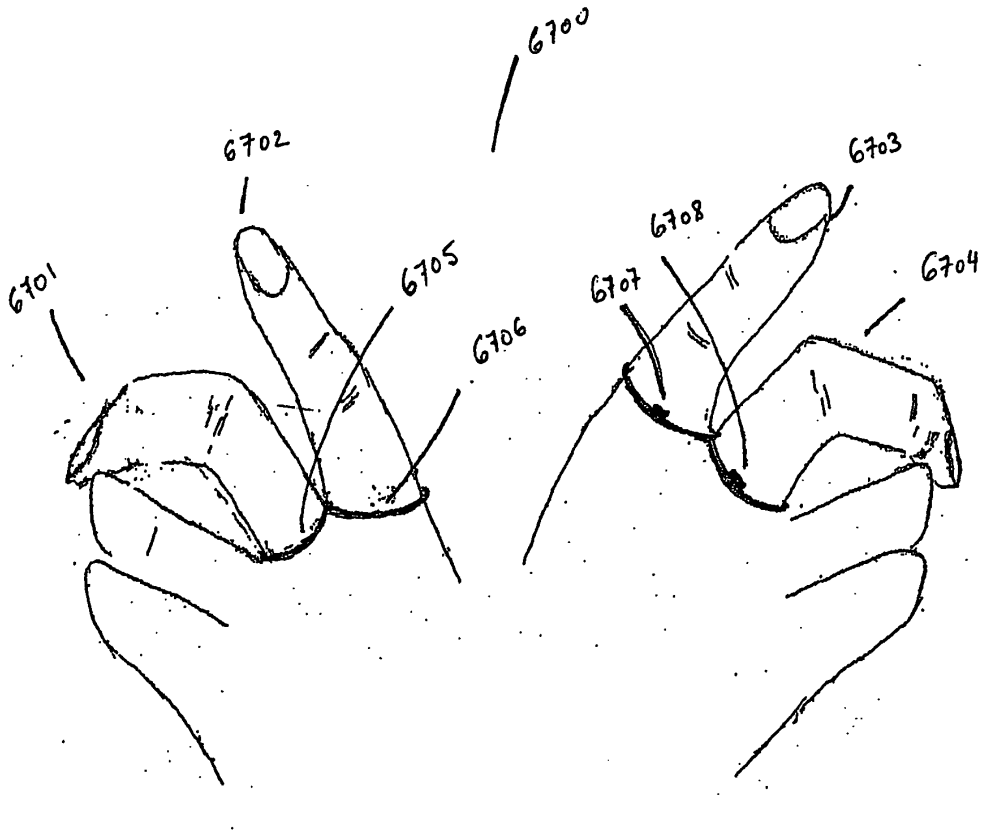


Fig. 67

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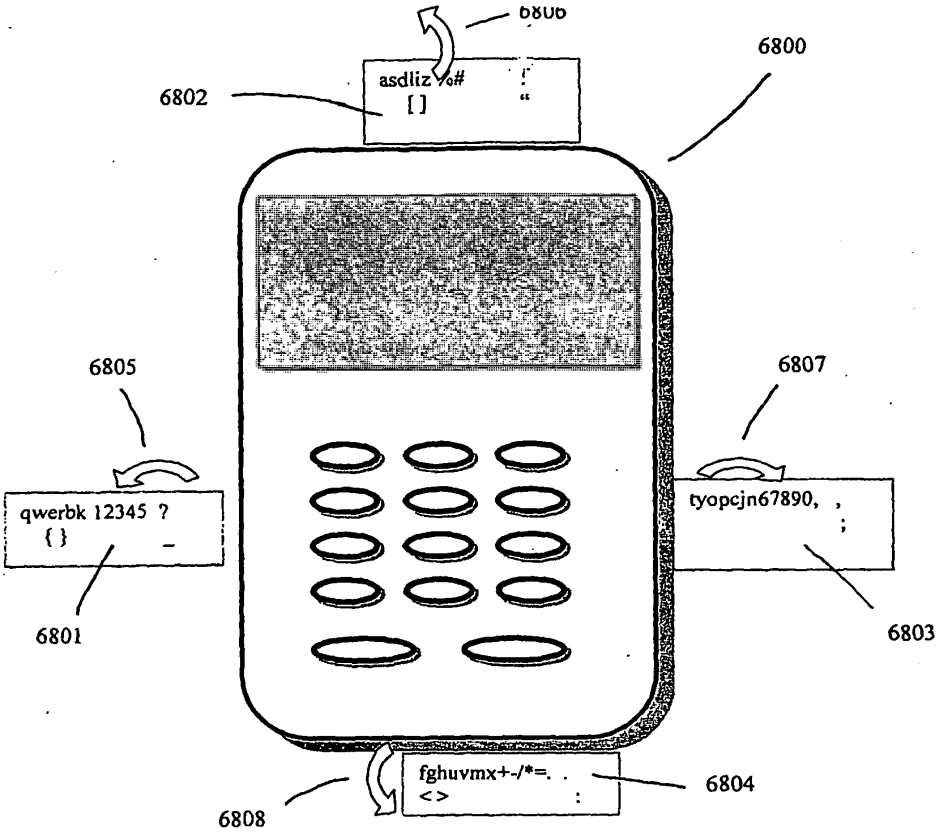


Fig. 68

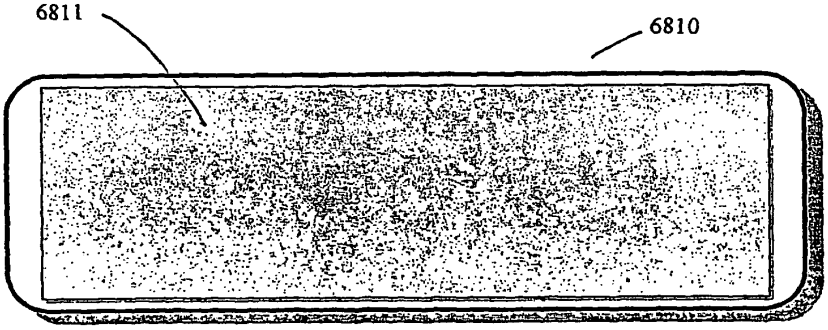


Fig. 68a

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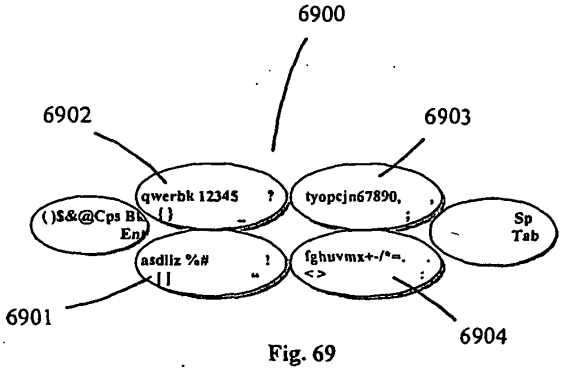


Fig. 69

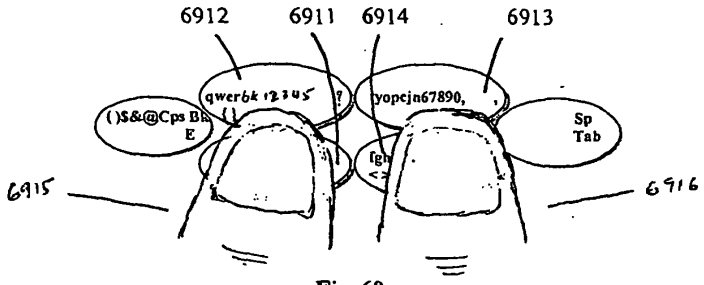


Fig. 69a

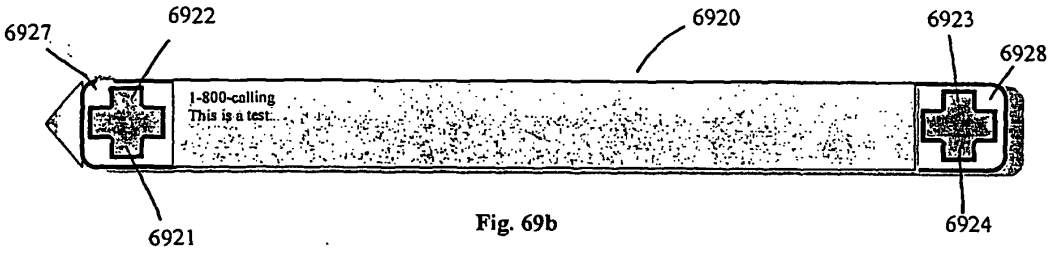


Fig. 69b

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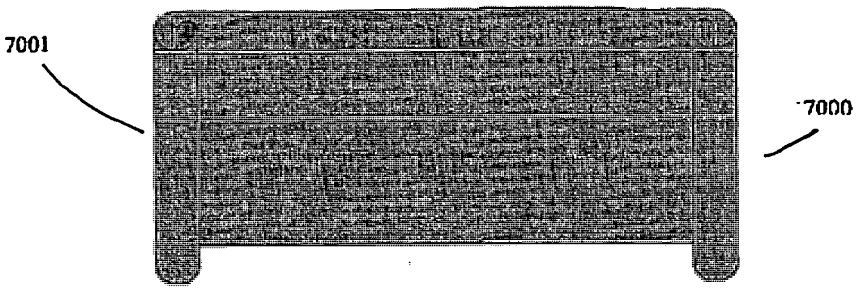


Fig. 70a

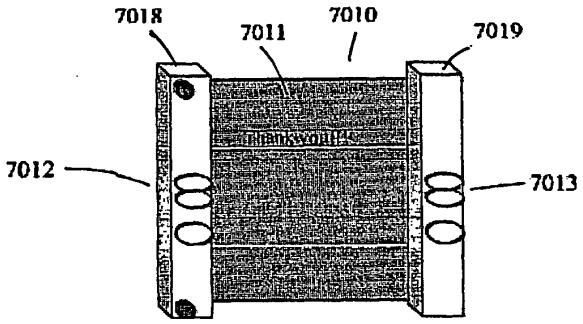


Fig. 70b

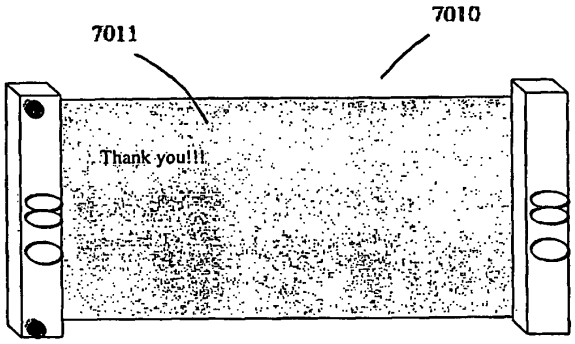


Fig. 70c

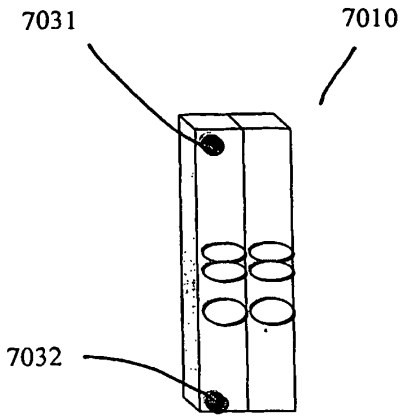


Fig. 70d

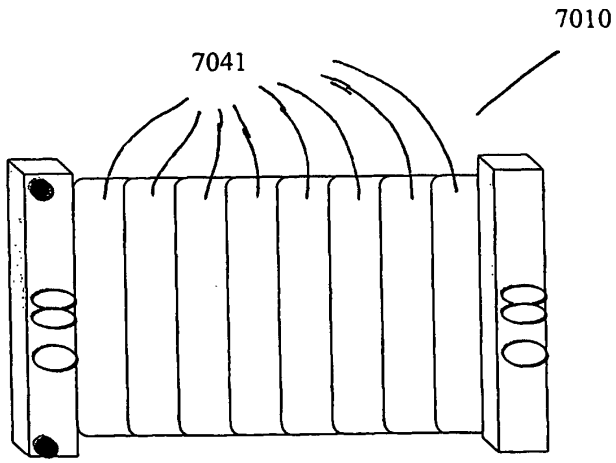


Fig. 70e

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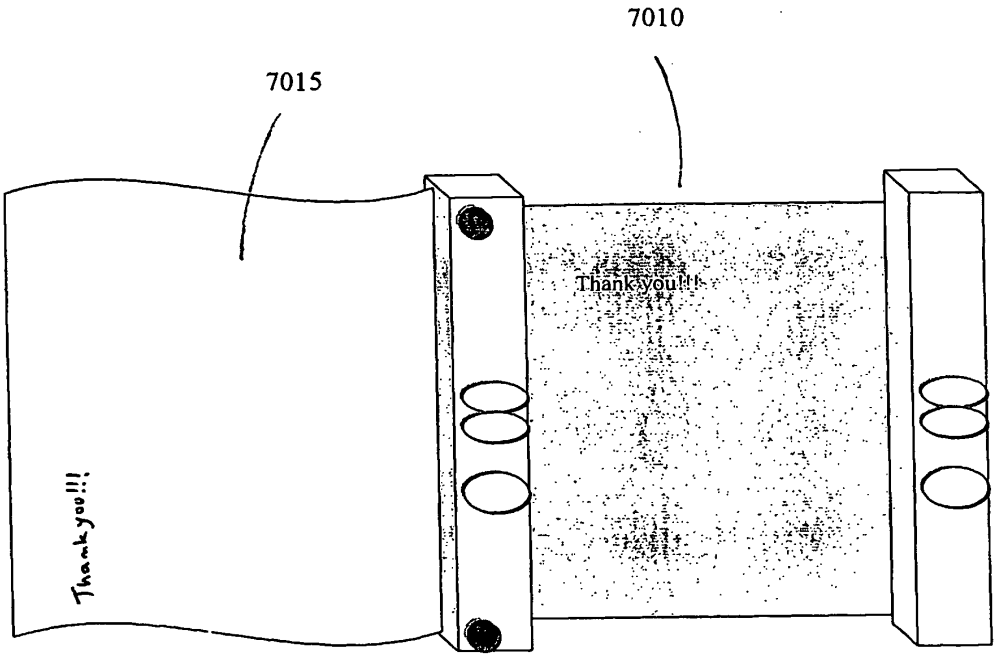


Fig. 70f

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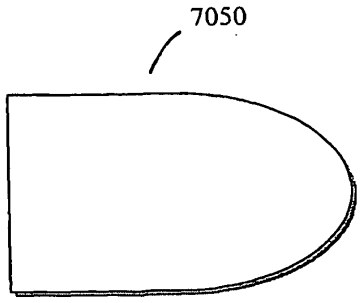


Fig. 70g

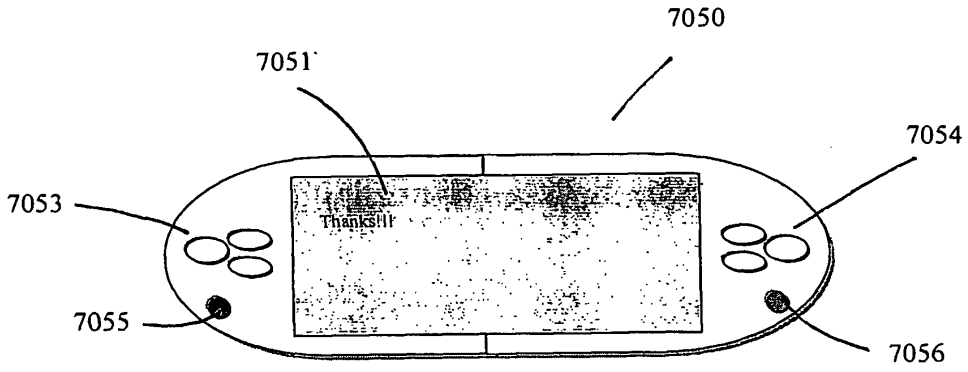


Fig. 70h

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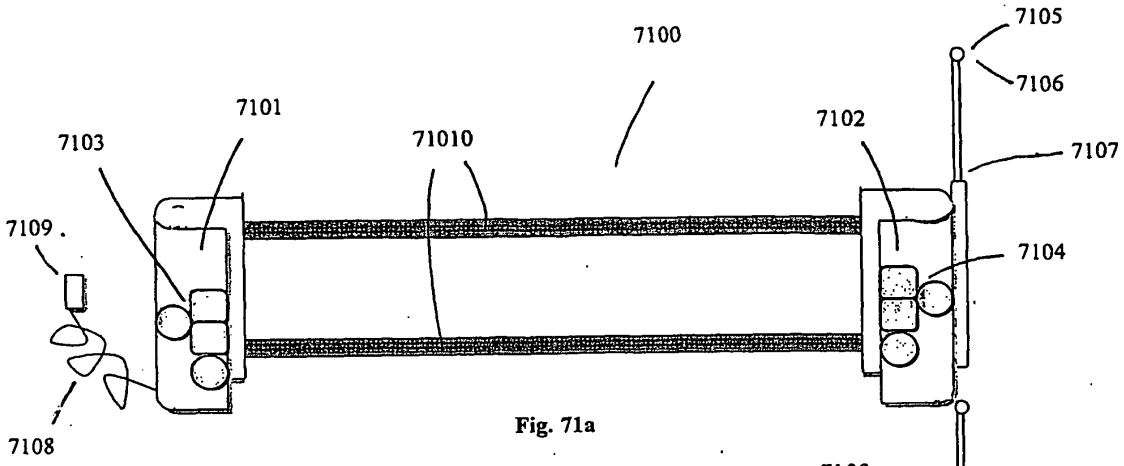


Fig. 71a

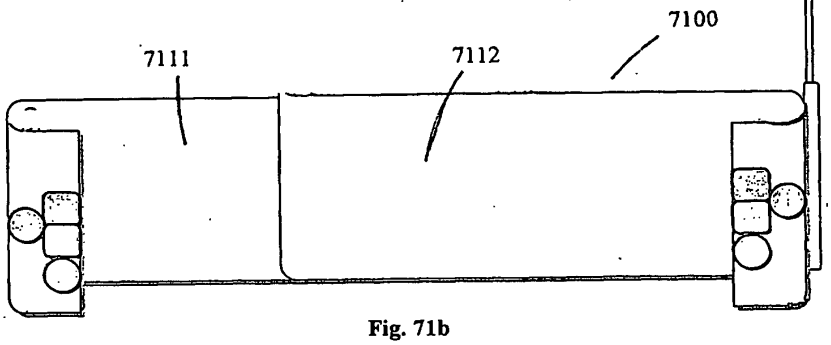


Fig. 71b

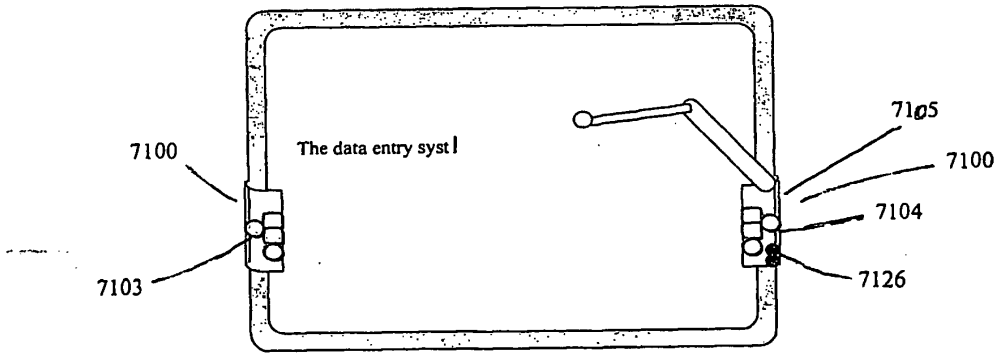


Fig. 71c

Samsung Exhibit 1006, Page 320 of 1063

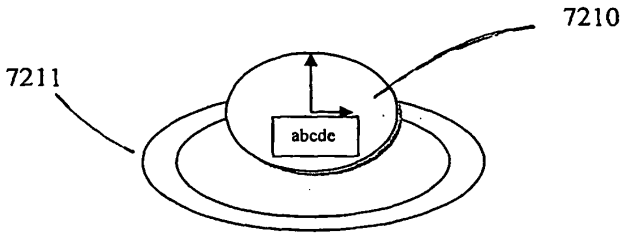


Fig. 72a



Fig. 72b

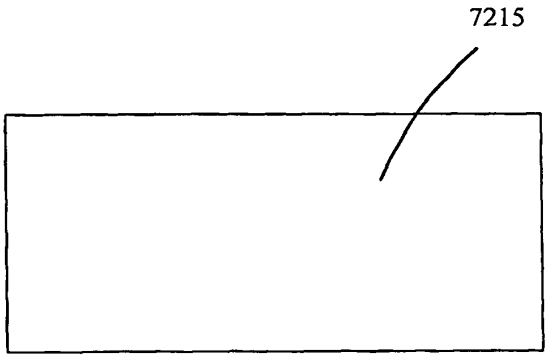


Fig. 72c

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10/553575

FILED UNDER 35 U.S.C. 371

U.S. **UTILITY** Patent Application

PATENT NUMBER and ISSUE DATE

APPLICATION NUMBER	FILING DATE	CLASS	SUBCLASS	GROUP ART UNIT	EXAMINER
		345		2673	

(FACE)

NOTICE OF ALLOWANCE MAILED		Assistant Examiner	CLAIMS ALLOWED: Total Claims	Print Claim for O.G
ISSUE FEE: Amount Due	Date Paid		DRAWING: Sheets Drwg.	Figs.Drwg. / Print Fig.
☐ TERMINAL DISCLAIMER		Primary Examiner / PREPARED FOR ISSUE	Application Examiner	

WARNING: The information disclosed herein may be restricted. Unauthorized disclosure may be prohibited by the United States Code Title 35, Sections 122, 181 and 368, Possession outside the U.S. Patent & Trademark Office is restricted to authorized employees and contractors only.

FILED WITH: ☐ DISK (CRF) ☐ CD-ROM (Attached in pocket on right inside flap)

BEST AVAILABLE COPY

PATENT APPLICATION SERIAL NO. _____

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE
FEE RECORD SHEET

10/26/2005 LLANDGRA 00000048 10553575

01 FC:2631	150.00	OP
02 FC:2633	100.00	OP
03 FC:2632	250.00	OP
04 FC:2615	300.00	OP
05 FC:2614	200.00	OP
06 FC:1206	500.00	OP

PTO-1556
(5/87)

*U.S. Government Printing Office: 2002 — 489-267/69033

10/553575
JC12 Rec'd PCT/PTO 17 OCT 2005

PATENT Docket No.676-025US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s) : Ghassabian

Serial No. : TBA Group Art Unit: TBA

Filed : October 17, 2005 Examiner: Not yet assigned

For : SYSTEMS TO ENHANCE DATA ENTRY IN MOBILE AND FIXED ENVIRONMENT

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Information Disclosure Statement is filed in accordance with 37 C.F.R. §§1.56, 1.97 and 1.98. The items listed on Form PTO-1449, a copy of which is enclosed, may be deemed to be pertinent to the above-identified application and are made of record to assist the Patent and Trademark Office in its examination of this application. The Examiner is respectfully requested to fully consider the items and to independently ascertain their teaching.

1. [ ] For each of the following items listed on the enclosed copy of Form PTO-1449 that is not in the English language, an English language translation of that item or a portion thereof or a concise explanation of the relevance of that item is enclosed:
A:
B:

2. [ ]For each of the following items listed on the enclosed copy of Form PTO-1449 that is not in the English language, a concise explanation of the relevance of that item is incorporated in the specification of the above-identified application.

3. [ ]Any copy of the items listed on the enclosed copy of Form PTO-1449 that is not enclosed with this Information Disclosure Statement was previously cited by or submitted to the Patent and Trademark Office in the prior [ ] Continuation, [ ] Divisional or [ ] Continuation-In-Part application under 37 C.F.R. §1.60, U.S. Serial No. _____, filed _____.

4. [X]No fee is due under 37 C.F.R. §1.17(p) for this Information Disclosure Statement since it is being filed in compliance with:

[ ] 37 C.F.R. §1.97(b)(1), within three months of the filing date of the above-identified application.

[X] 37 C.F.R. §1.97(b)(2), within three months of the date of entry into the national stage as set forth in §1.491 in an international application.

[ ] 37 C.F.R. §1.97(b)(3), before the mailing date of a first Office action on the merits.

5. [ ] No fee is due under 37 C.F.R. §1.17(p) for this Information Disclosure Statement since it is being filed in compliance with 37 C.F.R. §1.97(c), after the period specified in paragraph 4 above but before the mailing date of a final action or a Notice of Allowance (where there has been no prior final action), and is accompanied by one of the certifications pursuant to 37 C.F.R. §1.97(e) set forth in paragraph 9 below.

6. [ ] A fee is due under 37 C.F.R. §1.17(p) for this Information Disclosure Statement since it is being filed in compliance with 37 C.F.R. §1.97(c), after the period specified in paragraph 4 above but before the mailing date of a final action or a notice of allowance (where there has been no prior final action):

[ ]A check in the amount of $200.00 is enclosed in payment of the fee.

[ ] Charge the fee to Deposit Account No. 19-2825 . Order No. _____. A DUPLICATE COPY OF THIS SHEET IS ATTACHED.

7. [ ] A fee is due under 37 C.F.R. §1.17(i)(1) for this Information Disclosure Statement since it is being filed in compliance with 37 C.F.R. §1.97(d), after the mailing date of a final action or a notice of allowance, whichever comes first, but before payment of the issue fee, and is accompanied by:

a. one of the certifications pursuant to 37 C.F.R. §1.97(e) set forth in paragraph 9 below; and

b. the attached petition requesting consideration of this Information Disclosure Statement; and

c. the fee due under 37 C.F.R. §1.17(i)(1) which is paid as set forth in paragraph 10 below.

8. [ ] A fee is due under 37 C.F.R. §1.17(i)(1) for this Information Disclosure Statement since it is being filed in compliance with:

a. [ ] 37 C.F.R. §1.313(b)(3), after the issue fee has been paid and information cited in this Information Disclosure Statement may render at least one claim unpatentable and is accompanied by the attached Petition To Withdraw Application From Issue;

b. [ ] 37 C.F.R. §1.313(b)(5), after the issue fee has been paid and information cited in this Information Disclosure Statement is to be considered in a Continuation application upon abandonment of the instant application and is accompanied by the attached Petition To Withdraw Application From Issue.

c. The fee due under 37 C.F.R. §1.17(i)(1) is paid as set forth in paragraph 10 below.

9. [ ] I hereby certify that each item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement.

[ ] I hereby certify that no item of information in the Information Disclosure Statement filed herewith was cited in a communication from a foreign patent office in a counterpart foreign application or, to my knowledge after making reasonable inquiry, was known to any individual designated in §1.56© more than three months prior to the filing of this Information Disclosure Statement.

10. [ ] A check in the amount of $130.00 is enclosed in payment of the fee due under 37 C.F.R. §1.17(i)(1).

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JC12 Rec'd PCT/PTO 17 OCT 2005

[ ] Charge the fee due under 37 C.F.R. §1.17(i)(1) to Deposit Account No. . Order No. _____. A DUPLICATE COPY OF THIS SHEET IS ATTACHED.

[X] The Commissioner is hereby authorized to charge any additional fees which may be required for this Information Disclosure Statement, or credit any overpayment to Deposit Account No. 19-2825. Order No. 676-025US.

Respectfully submitted,

SOFER & HAROUN, L.L.P.

Dated: 10/17/05

By: _____
Joseph Sofer
Reg. No. 34,438

Mailing Address:

SOFER & HAROUN, LLP.
317 Madison Avenue, Suite 910
New York, NY 10017
Tel:(212) 697-2800
Fax: (212) 697-3004

JC12 Rec'd PCT/PTO 17 OCT 2005

FORM PTO-1449 U.S. DEPARTMENT OF COMMERCE (Rev.2-3) PATENT AND TRADEMARK OFFICE	ATTY. DOCKET NO. 676-025US	SERIAL NO. TBA 10/553575
INFORMATION DISCLOSURE STATEMENT BY APPLICANT	APPLICANT Ghassabian	
(Use several sheets if necessary)	FILING DATE October 17, 2005	GROUP TBA

U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
		6 2 9 5 0 5 2	09/2001	Kato et al.	345	179	February 18, 1997
		4 5 3 1 1 1 9	07/1985	Nakayama et al.	340	712	November 30, 1984
		5 7 9 0 1 0 3	08/1998	Willner	345	168	October 4, 1995
		5 8 6 7 1 4 9	02/1999	Jaeger	345	172	August 14, 1995
		6 3 2 6 9 5 2	12/2001	Amro et al.	345	168	April 24, 1998
		6 4 4 5 3 8 1	09/2002	Chou	345	168	March 9, 2004

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
							YES	NO

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

			International Search Report - August 5, 2004

EXAMINER	DATE CONSIDERED

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Transmittal Letter to the United States Designated/Elected Office (DO/EO/US) FORM PTO-1390

JC12 Rec'd PCT/PTC 17 OCT 2005

Docket No. : **676-025US**
U.S. Application No. : TBA
International Application No.: **PCT/US2004/012082**
International Filing Date. : **April 19, 2004 (19 April 2004)**
Title of Invention : **SYSTEMS TO ENHANCE DATA ENTRY IN MOBILE AND FIXED ENVIRONMENT**
Applicant(s) for (DO/EO/US) : **Ghassabian**

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. X This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ___ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. X This express request to begin national examination procedures 35 U.S.C. 371 (f) at any time rather than delay examination until the expiration of the applicable time limit set forth in 35 U.S.C 371(b) and PCT Articles 22 and 39(1).
4. ___ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. X A copy of the International Application as filed [35 U.S.C. 371(c)(2)].
   a) X is transmitted herewith (required only if not transmitted by the International Bureau).
   b) ___ has been transmitted by the international Bureau.
   c) ___ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. X A translation of the International Application into English [35 U.S.C.371(c)(2)].
7. ___ Amendments to the claims of the International Application under PCT Article 19 [35 U.S.C.371(c)(3)].
   a) ___ are transmitted herewith (required only if not transmitted by the International Bureau).
   b) ___ have been transmitted by the International Bureau.
   c) ___ have not been made; however, the time limit for making such amendments has **NOT** expired.
   d) ___ have not been made and will not be made.
8. ___ A translation of the amendments to the claims under PCT Article 19 [35 U.S.C.371(c)(3)].
9. ___ An unsigned oath or declaration of the inventor(s) [35 U.S.C.371(c)(4)].
10. ___ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 [35 U.S.C.371(c)(5)].

Items 11. to 16. below concern other document(s) or information included:

11. X An Information Disclosure Statement under 37 C.F.R. 1.97 and 198.
12. ___ An Assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ___ A **FIRST** preliminary amendment **to be entered at filing.**
    ___ A **SECOND** or **SUBSEQUENT** preliminary amendment.
14. ___ A substitute specification.
15. ___ A change of power of attorney and/or address letter.
16. ___ (other items or information)

EXPRESS MAIL No.: EV 634787702 US Deposited: **October 17, 2005**

I hereby certify that this correspondence is being deposited with the United States Postal Service Express mail under 37 CFR 1.10 on the date indicated above and is addressed to the Commissioner of Patents and Trademarks, Washington, DC 20231.

Valentina Papraniku — October 17, 2005

Valentina Papraniku Date

JC12 Rec'd PCT/PTO 17 OCT 2005

17. X The following fees are submitted:

	CALCULATIONS	PTO USE ONLY
BASIC NATIONAL FEE [37 CFR 1.492(a)(1)-(5)]:		
X Basic National Stage Fee, Search Fee, Exam Fee..... $ 1000.00	$1000.00	
___ International preliminary examination fee paid to USPTO [37 CFR 1.482]:..... $ 720.00		
___ No International preliminary examination fee paid to USPTO [37 CFR 1.4B2] but International search fee paid to USPTO [37CFR 1.445(a)(2):..... $ 740.00		
___ Neither International preliminary examination fee [37 CFR 1.482] nor International search fee [37 CFR 1.445(a)(2)] paid to USPTO:..... $ 1040.00		
___ International preliminary examination fee paid to USPTO [37 CFR 1.482] and all claims satisfied provisions of PCT Article 33 (2) to (4):..... $ 100.00		
ENTER APPROPRIATE BASIC FEE AMOUNT:	1000.00	
Surcharge of $ 130.00 for furnishing the oath or declaration later than ___20___30 months from the earliest claimed priority date [37 CFR 1.492(e)]	$	

(Claims are based on Preliminary Amendment filed herewith)	Claims	filed	Extra	Rate		
	Total Claims	32-20=	12 x	$25.00=	300.00	
	Indep. Claims	5-3=	2 x	$100.00 =	200.00	
	Multiple Dependent Claims (if applicable) +			$ 230.=	$	
TOTAL OF ABOVE CALCULATIONS:					$1500.00	
Reduction by ½ for filing by small entity, if applicable. Verified Small Entity Statement must be filed also. [Note 37 CFR 1.9,1.27, 1.28] (divided by 2)					$1500.00	
SUBTOTAL:					$1500.00	
Processing fee of $ 130.00 for furnishing the English Translation later than ___20 ___30 months from the earliest claimed priority date [37 CFR 1.492(f)]					$	
TOTAL NATIONAL FEE:					$1500.00	
Fee for recording the enclosed assignment [37 CFR 1.21(h)] The assignment must be accompanied by an appropriate cover sheet [37 CFR 3.28,3.31].						
TOTAL FEES ENCLOSED:					$1500.00	
AMOUNT TO BE REFUNDED:					Refunded	$
AMOUNT TO BE CHARGED:					Charged	$

10/553575
JC12 Rec'd PCT/PTO 17 OCT 2005

a) X A check in the amount of $1500.00 to cover the above fees is enclosed.

b) Please charge my Deposit Account No. 19-2825 in the amount of $ .00 to cover the above fees. A duplicate copy of this sheet is enclosed.

c) X The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 19-2825, order number 676-025US. A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 36 CFR 1.494 or 1.495 has not been met, a petition to revive [37 CFR 1.137(a) or (b)] must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO: Joseph Sofer, Esq.
Sofer & Haroun, LLP
317 Madison Avenue
Suite 910
New York, NY 10017
Customer No.: 39600

Joseph Sofer — signature — 34,438 — October 17, 2005
Name — Reg. No. — Date

15866 U.S. PTO
101705

10-18-05

10/553575

JC03 Rec'd PCT/PTO 17 OCT 2005

PCT

PATENT

Docket No. 676-025us

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s)	: Ghassabian
Serial No.	: TBA
Filed	: October 17, 2005
Title	: SYSTEMS TO ENHANCE DATA ENTRY IN MOBILE AND FIXED ENVIRONMENT

EXPRESS MAIL CERTIFICATE

Express Mail Label No.: EV 634787702 US

Date of Deposit October 17, 2005

I hereby certify that the following attached paper(s) or fee

1) National Stage Application (164 pages)
2) National Stage Transmittal
3) Return Postcard
4) Express Mail Certificate
5) Check for $1500.00
6) Informal Drawings (81 sheet)
7) International Patent Publication
8) IDS w/ Form PTO-1449

is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. §1.10 on the date indicated above and is addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Valentina Papraniku
(Typed or printed name of person mailing paper(s) or fee)

(Signature of person mailing paper(s) or fee)

Mailing Address:
SOFER & HAROUN, LLP
317 Madison Avenue, Suite 910
New York, New York 10017
Tel:(212) 697-2800; fax (212) 697-3004

10/553575
JC12 Rec'd PCT/PTC 17 OCT 2005

U.S. NATIONAL PHASE PATENT APPLICATION

FOR

SYSTEMS TO ENHANCE DATA ENTRY IN MOBILE AND FIXED ENVIRONMENT

Inventor: **Benjamin Firooz Ghassabian**

81/Parts

10/553575
JC12 Rec'd PCT/PTC 17 OCT 2005

Title:

SYSTEMS TO ENHANCE DATA ENTRY IN MOBILE AND FIXED ENVIRONMENT

Related Applications:

This application is a national phase patent application of PCT Patent Application No. PCT/US2004/012082, filed on April 19, 2004 which in turn claims the benefit of priority from U.S. Provisional Application Nos. 60/463,844, filed on April 18, 2003; 60/466,594, filed on April 30, 2003; 60/468,028, filed on May 5, 2003; 60/474,447, filed on May 30, 2003; 60/475,533, filed on June 3, 2003; 60/482,706, filed on June 26, 2003; 60/482,998, filed on June 27, 2003; 60/496,702, filed on August 20, 2003; 60/500,602, filed on September 5, 2003; 60/504,331, filed on September 19, 2003; 60/510,885, filed on October 14, 2003; 60/536,564, filed on January 14, 2004; 60/552,968, filed on March 11, 2004; and 60/557,140, filed on March 26, 2004, the entirety of which are incorporated herein by reference.

Field of the Invention:

This application relates to a system and method for entering characters. More specifically, this application relates to a system and method for entering characters using keys, voice or a combination thereof.

Background of the Invention:

Typical systems and methods for electronically entering characters include the use of standard keyboards such a QWERTY keyboard and the like. However, as modern electronic devices have become smaller, new methods have been developed in order to enter desired characters.

On such method is to use a multi-press system on a standard telephonic numeric keypad, whereby multiple alphanumeric characters are assigned to the same key. One drawback with such a system is that it requires multiple pressing of single keys in order to enter certain characters, thereby increasing the overall number of key presses, slowing the character entry process.

A second method to accommodate the entering of characters on the ever smaller devices has been to simply miniaturize the standard QWERTY keypad onto the devices. However, such miniaturized keypads are often clumsy and do not afford sufficient space between the keys, causing multiple key presses when only a single press is desired.

Yet another attempt to accommodate the entering of characters on smaller electronic devices, is the use of voice recognition software. Such methods have been in use for some time, but suffer from a number of drawbacks. Most notably, voice recognition software suffers from the inability to distinguish homonyms, and often requires significant advance input for the system to recognize a particular speaker, their mannerisms and speech habits. Also, voice recognition software, in attempting to alleviate these problems, has grown large and requires a good deal of processing, not particularly suitable for the limited energy and processing capabilities of smaller electronic devices, such a mobile phones and text pagers.

Objects and Summary of the Invention:

It is the object of the present invention to overcome the drawbacks associated with the prior art, and provide a system and method for entering characters that is fast, reliable, and does not require large amounts of set up and energy/processing expenditures.

To this end, the present invention is directed to a data input system having a keypad defining a plurality of keys, where each key contains at least one symbol of a group of symbols.

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The group of symbols are divided into subgroups having at least one of alphabetical symbols, numeric symbols, and command symbols, where each subgroup is associated with at least a portion of a user's finger.

A finger recognition system is provided, in communication with at least one key of the plurality of keys, where the at least one key has at least a first symbol from a first subgroup and at least a second symbol from a second subgroup, where the finger recognition system is configured to recognize the portion of the user's finger when the finger interacts with the key so as to select the symbol on the key corresponding to the subgroup associated with the portion of the user's finger.

Brief Description of the Drawings:

Fig. 1 illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 2 illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 3 illustrates a keypad with display, in accordance with one embodiment of the present invention;

Fig. 4 illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 5 illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 6 illustrates a keypad with display, in accordance with one embodiment of the present invention;

Fig. 7 illustrates a keypad with display, in accordance with one embodiment of the present invention;

Fig. 7a illustrates a flow chart for making corrections, in accordance with one embodiment of the present invention;

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Fig. 8 illustrates a foldable keypad, in accordance with one embodiment of the present invention;

Fig. 9 illustrates a foldable keypad, in accordance with one embodiment of the present invention;

Fig. 10 illustrates a foldable keypad, in accordance with one embodiment of the present invention;

Fig. 11 illustrates a foldable keypad, in accordance with one embodiment of the present invention;

Fig. 12 illustrates a foldable keypad, in accordance with one embodiment of the present invention;

Fig. 13 illustrates a keypad with display, in accordance with one embodiment of the present invention;

Fig. 14 illustrates a keypad with display, in accordance with one embodiment of the present invention;

Fig. 15 illustrates a keypad with a mouse, in accordance with one embodiment of the present invention;

Fig. 16 illustrates a keypad with a mouse, in accordance with one embodiment of the present invention;

Fig. 17 illustrates a number of devices to use with the keypad, in accordance with one embodiment of the present invention;

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Fig. 18 illustrates a keypad with a microphone, in accordance with one embodiment of the present invention;

Fig. 18b illustrates a keypad with a microphone, in accordance with one embodiment of the present invention;

Fig. 18c illustrates a keypad with a microphone, in accordance with one embodiment of the present invention;

Fig. 18d illustrates a keypad with a microphone, in accordance with one embodiment of the present invention;

Fig. 18e illustrates a keypad with an antenna, in accordance with one embodiment of the present invention;

Fig. 18f illustrates a keypad with an antenna, in accordance with one embodiment of the present invention;

Fig. 18g illustrates a keypad with a microphone, in accordance with one embodiment of the present invention;

Fig. 18h illustrates a keypad with a microphone, in accordance with one embodiment of the present invention;

Fig. 18i illustrates a keyboard with a microphone, in accordance with one embodiment of the present invention;

Fig. 19 illustrates a keypad with a display and PC, in accordance with one embodiment of the present invention;

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Fig. 20 illustrates a keypad with a display and PC, in accordance with one embodiment of the present invention;

Fig. 21 illustrates a keypad with a display and laptop computer, in accordance with one embodiment of the present invention;

Fig. 22 illustrates a keypad with a display and a display screen, in accordance with one embodiment of the present invention;

Fig. 22a illustrates a keypad with a foldable display, in accordance with one embodiment of the present invention;

Fig. 22b illustrates a wrist mounted keypad and a remote display, in accordance with one embodiment of the present invention;

Fig. 23a illustrates a wrist mounted keypad and foldable display, in accordance with one embodiment of the present invention;

Fig. 23a illustrates a wrist mounted keypad and foldable display, in accordance with one embodiment of the present invention;

Fig. 23a illustrates a wrist mounted foldable keypad, in accordance with one embodiment of the present invention;

Fig. 24a illustrates a keypad with foldable display, in accordance with one embodiment of the present invention;

Fig. 24b illustrates a keypad with foldable display, in accordance with one embodiment of the present invention;

Samsung Exhibit 1006, Page 338 of 1063

Fig. 25a illustrates a keypad with foldable display, in accordance with one embodiment of the present invention;

Fig. 25b illustrates a keypad with foldable display, in accordance with one embodiment of the present invention;

Fig. 26 illustrates a keypad with an extension arm, in accordance with one embodiment of the present invention;

Fig. 27 illustrates a keypad with an extension arm, in accordance with one embodiment of the present invention;

Fig. 27a illustrates a keypad with an extension arm, in accordance with one embodiment of the present invention;

Fig. 27b illustrates a keypad with an extension arm, in accordance with one embodiment of the present invention;

Fig. 28 illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 29 illustrates a mouthpiece, in accordance with one embodiment of the present invention;

Fig. 29a illustrates a keypad and mouthpiece combination, in accordance with one embodiment of the present invention;

Fig. 30 illustrates an earpiece, in accordance with one embodiment of the present invention;

Fig. 31 illustrates an earpiece and keypad combination, in accordance with one embodiment of the present invention;

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Fig. 32 illustrates an earpiece, in accordance with one embodiment of the present invention;

Fig. 33 illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 34 illustrates a voice recognition chart, in accordance with one embodiment of the present invention;

Fig. 35 illustrates a voice recognition chart, in accordance with one embodiment of the present invention;

Fig. 36 illustrates a sample voice recognition, in accordance with one embodiment of the present invention;

Fig. 37 illustrates a voice recognition chart, in accordance with one embodiment of the present invention;

Fig. 38 illustrates a voice recognition chart, in accordance with one embodiment of the present invention;

Fig. 39 illustrates a voice recognition chart, in accordance with one embodiment of the present invention;

Fig. 40 illustrates a voice recognition chart, in accordance with one embodiment of the present invention;

Fig. 41 illustrates a voice recognition chart, in accordance with one embodiment of the present invention;

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Fig. 42 illustrates a traditional keyboard, in accordance with one embodiment of the present invention;

Fig. 43 illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 43a illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 43b illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 44a illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 44b illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 45 illustrates a keyboard, in accordance with one embodiment of the present invention;

Fig. 45a illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 45b illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 45c illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 45d illustrates a keypad, in accordance with one embodiment of the present invention;

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Fig. 46a illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 46b illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 46c illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 47a illustrates a keypad with display, in accordance with one embodiment of the present invention;

Fig. 47b illustrates a keypad with display, in accordance with one embodiment of the present invention;

Fig. 47c illustrates a keypad with display, in accordance with one embodiment of the present invention;

Fig. 47d illustrates a keypad with display, in accordance with one embodiment of the present invention;

Fig. 47e illustrates a keypad with display, in accordance with one embodiment of the present invention;

Fig. 47f illustrates a keypad with display, in accordance with one embodiment of the present invention;

Fig. 47g illustrates a standard folded paper, in accordance with one embodiment of the present invention;

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Fig. 47h illustrates a standard folded paper, in accordance with one embodiment of the present invention;

Fig. 47i illustrates a standard folded paper with a keypad and display printer, in accordance with one embodiment of the present invention;

Fig. 48 illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 49 illustrates a watch with keypad and display, in accordance with one embodiment of the present invention;

Fig. 49a illustrates a watch with folded keypad and display, in accordance with one embodiment of the present invention;

Fig. 49b illustrates a closed watch with keypad and display, in accordance with one embodiment of the present invention;

Fig. 50a illustrates a closed folded watch face with keypad, in accordance with one embodiment of the present invention;

Fig. 50b illustrates an open folded watch face with keypad, in accordance with one embodiment of the present invention;

Fig. 51 illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 51a illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 51b illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 52 illustrates a keypad, in accordance with one embodiment of the present invention;

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Fig. 53 illustrates a keypad and display, in accordance with one embodiment of the present invention;

Fig. 54 illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 55a illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 55b illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 55c illustrates a keypad on the user's hand, in accordance with one embodiment of the present invention;

Fig. 55d illustrates a microphone and camera, in accordance with one embodiment of the present invention;

Fig. 55e illustrates a microphone and camera, in accordance with one embodiment of the present invention;

Fig. 55f illustrates a folded keypad, in accordance with one embodiment of the present invention;

Fig. 55g illustrates a key for a keypad, in accordance with one embodiment of the present invention;

Fig. 55h illustrates a keypad on a mouse, in accordance with one embodiment of the present invention;

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Fig. 55i illustrates the underside of a mouse on a keypad, in accordance with one embodiment of the present invention;

Fig. 55j illustrates an earphone, and microphone with a keypad, in accordance with one embodiment of the present invention;

Fig. 56 illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 56a illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 56b illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 57 illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 57a illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 58a illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 58b illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 58c illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 59a illustrates a keypad, in accordance with one embodiment of the present invention;

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Fig. 59b illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 60 illustrates a keypad and display cover, in accordance with one embodiment of the present invention;

Fig. 61a illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 61b illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 61c illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 62a illustrates a keypad and display, in accordance with one embodiment of the present invention;

Fig. 62b illustrates a keypad and display, in accordance with one embodiment of the present invention;

Fig. 63a illustrates a keypad and display, in accordance with one embodiment of the present invention;

Fig. 63b illustrates a keypad and display, in accordance with one embodiment of the present invention;

Fig. 63c illustrates a keypad and display, in accordance with one embodiment of the present invention;

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Fig. 63d illustrates a keypad and display, in accordance with one embodiment of the present invention;

Fig. 63e illustrates a keypad and display on a headset, in accordance with one embodiment of the present invention;

Fig. 64a illustrates a keypad and display, in accordance with one embodiment of the present invention;

Fig. 64b illustrates a foldable keypad and display, in accordance with one embodiment of the present invention;

Fig. 65a illustrates a keypad and display, in accordance with one embodiment of the present invention;

Fig. 65b illustrates the back side of a keypad and display, in accordance with one embodiment of the present invention;

Fig. 65c illustrates a keypad and display, in accordance with one embodiment of the present invention;

Fig. 66 illustrates a plurality of keypads and displays connected through a main server/computer, in accordance with one embodiment of the present invention;

Fig. 67, illustrates a keypad in the form of ring sensors, in accordance with one embodiment of the present invention;

Fig. 68 illustrates a keypad and display, in accordance with one embodiment of the present invention;

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Fig. 68a illustrates a display, in accordance with one embodiment of the present invention;

Fig. 69 illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 69a illustrates a keypad, in accordance with one embodiment of the present invention;

Fig. 69b illustrates a keypad and display, in accordance with one embodiment of the present invention;

Fig. 70a illustrates a flexible display, in accordance with one embodiment of the present invention;

Fig. 70b illustrates a flexible display with keypad, in accordance with one embodiment of the present invention;

Fig. 70c illustrates a flexible display with keypad, in accordance with one embodiment of the present invention;

Fig. 70d illustrates a closed collapsible display with keypad, in accordance with one embodiment of the present invention;

Fig. 70e illustrates an open collapsible display with keypad, in accordance with one embodiment of the present invention;

Fig. 70f illustrates a flexible display with keypad and printer, in accordance with one embodiment of the present invention;

Fig. 70g illustrates a closed foldable display with keypad, in accordance with one embodiment of the present invention;

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Fig. 70h illustrates an open foldable display with keypad, in accordance with one embodiment of the present invention;

Fig. 71a illustrates a flexible display with keypad and antenna, in accordance with one embodiment of the present invention;

Fig. 71b illustrates a flexible display with keypad and antenna, in accordance with one embodiment of the present invention;

Fig. 71c illustrates a display with keypad and extendable microphone, in accordance with one embodiment of the present invention;

Fig. 72a illustrates a wristband of an electronic device, in accordance with one embodiment of the present invention;

Fig. 72b illustrates a detached flexible display in a closed position, in accordance with one embodiment of the present invention; and

Fig. 72c illustrates a detached flexible display in an open position, in accordance with one embodiment of the present invention.

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Detailed Description of the Preferred Embodiment:

The invention described hereafter relates to method of configuration of symbols such as characters, punctuation, functions, etc. (e.g. symbols of a computer keyboard) on a small keypad having a limited number of keys, for data entry in general, and for data and/or text entry method combining voice/speech of a user and key interactions (e.g. key presses) on a keypad, in particular. This method facilitates the use of such a keypad.

Fig. 1, shows an example of an integrated keypad 100 for a data entry method using key presses and voice/speech recognition systems. In this example, the keys of the keypad may respond to one or more type of interactions with them. Said interactions may be such as:

- pressing a key with a specific finger or a portion of a finger (using a finger recognition system)
- a single tap (e.g. press) on a key or a double tap (e.g. two consecutive presses with short time interval) on a key.
- a slight pressure (or a touch) on a key, or a heavy pressure on a key
- a short time interaction with a key (e.g. a short time pressing of a key) or a longer time pressing of a key etc...

To each of said interactions or to any combination of them with the keys of the keypad, a group of symbols on said keypad may be assigned. For example, the symbols shown on the top side of the keys of the keypad 100, may be assigned to a single pressure on the keys of the keypad. If a user, for example presses the key 101, the symbols "DEF3 ." may be selected. In the same example, the symbols configured on the bottom side of the keys of the keypad 100, may be assigned for example, to a double tap on said keys. If a user, for examples double taps on the key 101, then the symbols "{ }' " are selected.

Same selection may also be possible with other interactions such as those described before depending on the system implemented with the keys of the keypad. For example, a slight press (or a touch) on the key 101, could select the symbols configured on the top side of said key, and a heavier pressure on the same key, could select the symbols configured on the bottom side of said key.

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As described, when a user interacts with a key, a recognition system candidates the symbols on said key which are assigned to said type of interaction. For example, if a user touches or slightly presses the key 102, the system candidates the symbols, "A", "B", "C", "2", and ",". To select one of said candidated symbols, said user may speak, for example, either said symbol or a position appellation of said symbol on said key. For this purpose a voice/speech recognition systems is used.

If the user does not speak, a predefined symbol among those candidated symbols, may be selected as default. In this example, the punctuation "," shown in a box 103 is selected. To select one of the other candidated symbols, for example the letter "B", the user may speak said letter.

In the same example, if the user presses heavily the key 102, then the symbols "[", "]", and " " " may be candidated. As described above, if the user does not speak, a predefined symbol among those selected by said pressing action, may be selected as default. In this example, the punctuation " " " is selected. Also in this example, to select a desired symbol among the two other candidated symbols "[", or "]", the user may use different methods such as speaking said desired symbol, and/or speaking its position relating to the other symbols, and/or speaking its color (if each symbol has a different color), and/or any predefined appellation (e.g. a predefined voice or sound generated by a user) assigned to said symbol. For example, if the user says "left", then the character "[" is selected. If the user says "right", then the character "]" is selected.

Of course, instead of using a voice/speech, a behavior of a user combined with a key interaction may select a symbol. For example, a user may press the key 102 heavily and swipe his finger towards a desired symbol.

The above-mentioned method of data entry may also be applied to a keypad having keys responding to a single type of interaction with said keys (e.g. a standard telephone keypad having push-buttons). As shown in Fig. 2, a keypad 200 having keys responding to a single interaction with said keys. When a user presses a key all of the symbols on said key are candidated by the system. For example, if the user presses the key 202, then the symbols, "A", "B", "C", "2", ",", "[", " ", and "]" are canditated.

In this example, if the user does not speak, the system may select a predefined default symbol. In this example, punctuation "," 203 is selected.

Still in the same example, to select a desired symbol among the said candidates, the user may either speak a desired symbol, or for example, speak a position appellation of said symbol,

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on said key or relating to other symbols on said key, or any other appellation as described before. For example, a symbol among those configured on the top of the key (e.g. "A", "B", "C", or "2"), may be selected by speaking it. On other hand, for example, one of the symbols configured on the bottom side of the key, (e.g. "[", " ", or "]") may be selected by speaking its position relative, for example, to the two other symbols on the bottom side of said key, by saying for example, "left", "middle", or "right". For example, to select "[" 204, the user may press the key 202 and say "left".

As mentioned, the keys the keypad of fig.1, may respond to at least two predefined types of interactions with them. Each type of interaction with a key of said keypad may candidate a group of said characters on said key.

As described before, during a data entry such as writing a text, different interactions with the keys (e.g. one tap, double tap) and different user behavior (e.g. speaking, not speaking) combined with said key interactions, may be required. Although the data entry method of this invention is a quick and easy data entry, a good configuration of the symbols on the keys of the keypad of this invention, may result a still easier and quicker data entry system. This method will be described hereafter.

According to one embodiment, as shown in fig. 3, a number of symbols (e.g. symbols on a computer keyboard) are physically divided into at least two groups and arranged on a telephone keypad keys by their order of priority (e.g. frequency of use, familiarity of the user with existing arrangement of some symbols such as letters and digits on a standard telephone keypad, etc.), as follow:

First group assigned to a first type of interaction with a keys

a) A first subgroup using voice/speech

Digits 0 – 9, and letters A-Z may be placed on the keys of a keypad according to standard configuration and assigned to a first type of interaction (e.g. a first level of pressure) with said keys. A desired symbol among them may be selected by interacting (e.g. said first type of interaction) with a corresponding key and naturally speaking said symbol. In fig. 3 said symbols (e.g. 301) are configured on the top side of the keys.

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Letters and digits may frequently be used during, for example, a text entry. They both, may naturally be spoken while, for example, tapping on corresponding keys. Therefor, for faster and easier data entry, they preferably may be assigned to a same type of interaction with the keys of a keypad.

b) A second subgroup not using voice/speech

At least part of the other symbols (e.g. punctuation, functions, etc.) which are frequently used during a data (e.g. text) entry may be placed on the keys (one symbol per key) of the keypad and be assigned to said first type of interaction (e.g. a single tap) with said keys. As default, a desired symbol may be selected by only said interaction with corresponding key without the use of speech/voice. In fig. 3 said symbols (e.g. 302) are configured in boxes on the top side of the keys.

Of course, said symbols may also be selected by speaking them while interacting with a corresponding key, but because speaking this kind of symbols (e.g. punctuation, functions) is not always a natural behavior, it is preferable to not to speak them.

<u>At least a second group assigned to at least a second type of interaction with at least one key</u>

At least part of the remaining symbols may be assigned to at least a second type of interaction with said keys of said keypad. They may be divided into two groups as follow:

c) A third subgroup not using voice/speech

A third subgroup comprising the remaining frequently used symbols and the ones which are difficult and/or not natural to pronounce, may be placed on said keys of said keypad (one symbol per key) and assigned to a second type of interaction (e.g. double tap, heavier pressure level, two keys pressed simultaneously, a portion of a finger by which the key is touched, etc.) with said keys.

As default, a desired symbol may be selected by only said interaction with a corresponding key without the use of speech/voice. In fig. 3 said symbols (e.g. 303) are configured in boxes on the bottom side of the keys. Of course, said symbols may also be

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selected by speaking them while interacting with a corresponding key, but because speaking this kind of symbols (e.g. punctuation, functions) is not always a natural behavior, it is preferable to not to speak them.

d) At least a fourth subgroup using voice/speech

A fourth subgroup comprising at least part of remaining symbols may also be assigned to said second type of interaction with the keys of said keypad and be combined with a user's behavior such as voice. In fig. 3 said symbols (e.g. 304) are configured on the bottom side of the keys. Said symbols may be selected by said second type of interaction with a corresponding key and use of voice/speech in different manners such as:

- the symbols being selected by naturally pronouncing their appellation
- the symbols being selected by naturally speaking their position relative to each other on a key or their position while using them in a text (e.g. "<", ">" in this example, said symbols do not belong to said second type of interaction, this is only an example), by saying for example, "left, right, open, close, etc."
- the symbols which are very rarely used (they are very few) and/or are difficult to pronounce (e.g. 304). For a fast and easy data entry method, said symbols may also be selected by speaking their position on a key, or relative to each other on said key. Of course they may be selected by using other speech such a pronouncing them.

e) Others

If needed, other symbols such as "F1-F12", etc. may be provided on the keys of the keypad and assigned a type of interaction. For example, they may be assigned to said second type of interaction (with or without using speech), or be assigned to another kind of interaction such as pressing two keys simultaneously, triple tagging on corresponding key(s), using a switch to enter to another mode, etc.

<u>More considerations to enhance the keypad and the use of it</u>

Because Digits 0 – 9, and letters A-Z may be placed on the keys of a keypad according to standard configuration and be assigned to a first type of interaction (e.g. a first level of

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pressure, a single tap, etc.) with said keys combined with speech, some keys such as 311, 312, 313, and 314, may contain at most one symbol (e.g. digit 1 on the key 311, or digit 0 on the key 313) used in said configuration. Thus, for better use of said keys, some easy and natural to pronounce symbols 321-324 may be added on said keys and be assigned to said first type of interaction. for example, a user can select the character "(" by using a first type of interaction with key 311 and saying, for example, "left", or "open". To select the character ")" the user may use the same first type of interaction with said key 311 and say for example, "right" or "close". This is a quick, and more importantly a natural speech for said symbols. Because the number of candidated symbols on said keys 311-314, assigned to said first type of interaction does not exceed the ones on the other keys, the voice recognition system may still have a similar degree of accuracy as for the other keys.

Also, some symbols may be used in both modes (interactions with the keys). Said symbols may be configured more than once on a keypad (e.g. either on a single key or on different keys) and be assigned to a first and/or to a second type of interaction with corresponding key(s).

Fig.3, illustrates a preferred embodiment of this invention for a computer data entry system. The keys of the keypad 300 respond to two or more different interaction (such as different levels of pressures, single or double tap, etc.) on them. As shown, a number of symbols, such as alphanumerical characters, punctuations, functions, and PC command are distributed among said keys as follow:

Mode 1

First group- Letters A-Z and digits 0-9 are the symbols which are very frequently used during a data entry such as writing a text. They may easily and most importantly, naturally, be pronounced while pressing corresponding keys. Therefor they are arranged together on the same side on the keys, belonging to a same type of interaction (e.g. a first mode) such as a single tap (e.g. single press) on a key, and are selected by speaking them.

Second group- Characters such as punctuations, and functions which are very frequently used during a data entry such as writing a text, may belong to a same type of interaction which is used for selecting said letters and digits (e.g. said first mode). This is to stay, as much as possible, with a same type of interaction with the keys while entering data. Each key may only

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have one of said characters of said second group. This group of symbols may be selected by only pressing a corresponding key, without using voice. For better distinction, they are shown in boxes on the top (e.g. same side as for the letters and the digits) of the keys.

Mode 2

Other symbols of said number of symbols are shown on the bottom side of the keys of the keypad. They are assigned to a second type of interaction (e.g. double tap) with said keys.

Third group- The default symbols (e.g. those which require an interaction with a key and may not require use of voice) are shown in boxes. Said symbols comprise characters, punctuations, functions, etc., which are less currently used by users.

Fourth group- Finally the symbols which are rarely used in a data entry, and are not spelled naturally, are in this example, located at the left side on the bottom side of the keys. They may be selected by corresponding interaction (e.g. double tapping) with corresponding key and either (e.g. almost simultaneously) pronouncing them, or calling them by speaking a predefined speech or voice assigned to said symbols (e.g. "left, right", or "blue, red" etc.).

By using a keypad having keys corresponding to different type of interaction with them (preferably two types, to not complicate the use of the keys) and having some symbols which do not require speech (e.g. defaults), when a key of said keypad is interacted, either a desired key is directly interacted (e.g. default), or the candidated symbols to be selected by a user behavior such as voice/speech are minimal. This augments the accuracy of voice recognition system.

For example, when a user slightly presses a key, the system selects the symbols on the top of said key among those symbols situated on said key. If the user simultaneously uses a voice, then the system selects those symbols requiring voice among said selected symbols. This procedure of reducing the number of candidates and requiring voice recognition technology to select one of them, is used to have a data entry with high accuracy through a keypad having a limited number of keys. The reducing procedure is made by user natural behaviors, such as pressing a key and/or speaking.

As shown in fig.4, the keys 411, 412, 413, and 414, have up to one symbol (shown on the top side of said keys) requiring voice interaction and assigned to a first type of interaction with said keys. On the other hand, same keys on the bottom side contain two symbols which require a

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second type of interaction with said keys and also requires voice interaction. Said two symbols may be used more frequently (e.g. in an arithmetic data entry or when writing a software, etc.) than the other symbols belonging to same category. In this case and to still minimize the user errors while interacting with keys (e.g. pressing), said symbols may also been assigned to said first type of interaction with said keys. The total of the candidated symbol remains low. A user may press said key as he desires and speak.

Additional arrangements may be provided on above-mentioned keypad to facilitate its use by a user. For example, "-" and "_" , "" and "", or ";" and ":" may be configured as default symbols on a same key 411, or on two neighboring keys 415, 416. Also "Sp" and " " (e.g. Tab), may also be considered as default symbols and been configured on the same key 412, each responding to a different type of interaction (e.g. pressing level) with said key. For example, by pressing once the key 412, the character "Sp" is selected. By double tapping the same key, the "tab" function is selected.

While interacting with a key (e.g. pressing a key once or double tagging on it), by not releasing said key, a symbol corresponding to said interaction (including speech if needed) may be selected and repeated until the key is released. For example, by double tapping on the key 415 and keeping the key pressed after the second tap and not speaking, the default symbol (e.g. "&") assigned to said interaction is selected and repeated until the user releases said key. To enter the letter "X" and repeating it, the user may for example, press the corresponding key 415 (without releasing it) and say "X". The letter "X" will be repeated until the user releases said key.

Also, for a more familiar look of the keypad, letters, digits, and characters such as "#" and "*", may be placed on said keys according to a standard telephone keypad configuration.

Additional keys separately disposed from the keys of said keypad may be used to contain some of said symbols or additional symbols. In the example of Fig. 6, the cursor is navigated in different directions by at least one key separately disposed from the keys of the keypad 600. A single key 601, may be assigned to all directions 602. The user may, for example, press said key and say "up, down, left, or right to navigate the cursor in corresponding directions. The key 601, may also be a multi-directional key (e.g. similar to those used in video games, or in some cellular phones to navigate in the menu). The user may press on the top, right, bottom, or left side of the key 601, to navigate the cursor accordingly. Also a plurality of additional keys may be assigned, each to for example, to at least a symbol such as " ".

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Said additional keys may be the existing keys on an electronic device. For example, in a cellular phone, in addition to the twelve keys of a standard telephone keypad, additional function keys such as menu key, or on/of key etc., are provided. at least some of those keys may be used as additional data entry keys, containing a number of symbols, while the system is, for example, in a text entry mode. This frees some spaces on the standard telephone keypad keys. The freed spaces may permit a better accuracy of voice recognition system and/or a more user friendly configuration of the symbols on the keys of the keypad.

The above-mentioned method of configuration and the examples shown before are only shown as examples. Of course many other configurations of the symbols and different assignment to different user interactions with the keys may be considered. For example, a key may not have a default symbol or on a key, there may be no symbols which are assigned to a voice/speech.

Also not all of the keys of the keypad may respond to a same kind of interaction. For example, a first key of a keypad may respond to two levels of pressure while another key of the same keypad may respond to a single or double tap on it.

Figs. 1-7 show different configurations of the symbols on the keys of keypads.

The above-mentioned data entry system permits a full data entry such as a full text data entry through a computer keypad. By inputting, one by one, characters such as letters, punctuation marks, functions, etc, words, and sentences may be inputted.

This will have a great impact on telecommunication market permitting to enhance many applications and methods already in use. Some of them are listed hereafter. It is understood that any combination of the above-mentioned interactions may be used for inputting a desired symbol.

According to one embodiment of the invention, the user uses voice/speech to input a desired symbol such as a letter without other interaction such as pressing a key. The user may use the keys of the keypad (e.g. single press, double press, triple press, etc) to enter symbols such as punctuations without speaking them.

It is understood that the data entry method described in this application may be applied to all other languages such as Chinese, Koreans, Japanese, Etc.

Correction and Repeating of Symbols

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Different methods may be used to correct an erroneously entered symbol. As mentioned, to enter a symbol, a user for example, may press a corresponding key and speak said desired symbol configured on said key. It may happen that the voice/speech recognition system misinterprets the user's speech and the system selects a non-desired symbol configured on said key.

For example, if the user:

a) recognizes an erroneously entered symbol before entering a next desired symbol (e.g. the cursor is positioned after said erroneous symbol, next to it), he then may proceed a correction procedure explained hereafter;

b) recognizes an erroneously entered symbol after entering at least a next symbol, he first may navigate in the text by corresponding means such as the key 101 (fig.1), or 202 (fig.2), having navigation functions, and positions the cursor after said erroneous symbol next to it. He, then, proceeds to a correction procedure explained hereafter;

After positioning the cursor after said erroneous symbol, next to it, the user may re-speak either said desired symbol or its position appellation without re-pressing said corresponding key. If the system again selects the same deleted symbol, it will automatically reject said selection and selects a symbol among remaining symbols configured on said key, wherein either its appellation or its position appellation corresponds to next highest probability corresponding to said user's speech. If still an erroneous symbol is selected by the system, the procedure of re-speaking the desired symbol by the user and the selection of the next symbol among the remaining symbols on said key with highest probability, may continue until said desired symbol is selected by the system.

It is understood that in a data entry system using a keypad having keys responding, for example, two levels of pressure, when correcting, the recognition system may first proceed to select a symbol among those belonging to the same group of symbols belonging to the pressure level applied for selecting said erroneous symbol. If none of those symbols is accepted by the user, then the system may proceed to select a symbol among the symbols belonging to the other pressure level on said key.

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Fig. 7B, shows a flowchart corresponding to an embodiment of a method of correction. If for any reason a user wants to correct an already entered symbol, he may enter this correction procedure.

Correction procedure starts at step 701. If the replacing symbol is not situated on the same key as the to-be-replaced symbol 702, then the user deletes the to-be-replaced symbol 704, and enters the replacing symbol by pressing a corresponding key and if needed, with added speech 706 and exits 724.

If the replacing symbol is situated on the same key as the to-be-replaced symbol 708, and the replacing symbol does not require speech 710, then the system proceeds to steps 704 and 706, and acts accordingly as described before, and exits 724.

If the replacing symbol is situated on the same key as the to-be-replaced symbol 708, and the replacing symbol does require speech 712, two possibilities are considered:

a) the cursor is not situated after the to-be-replaced symbol 714. In this case the user positions the cursor after the to-be-replaced symbol, next to it 716, and proceeds to next step 718;
b) the cursor is situated after the to-be-replaced symbol 714 (e.g. the user recognizes an erroneously entered symbol, immediately). In this case the user proceeds to next step 718;

At the step 718, the user speaks the desired symbol without pressing a key. By not pressing a key and only speaking, the system understands that a symbol belonging to a key which is situated before the cursor must be replaced by another symbol belonging to the same key. The system then, will select a symbol among the rest of the symbols (e.g. excluding the symbols already selected) on said key with highest probability corresponding to said speech 720. If the new selected symbol is yet a non-desired symbol 722, the system (and the user) re-enters at the step 718. If the selected symbol is the desired one the system exits the correction procedure 724.

Of course, instead of the above-mentioned method, a conventional method of correcting a symbol may also be provided. for example, to correct an already entered symbol, the user may

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simply, first delete said symbol and then re-enter a new symbol by pressing a corresponding key and if needed, with added speech.

The text entry system, may also be applied to a word level (e.g. the user speaks a word and types it by using a keypad). A same text entry procedure may combine word level entry (e.g. for words contained in a data base) and character level entry. Therefore the correction procedure described above, may also be applied for a word level data entry.

For example, to enter a word a user may speak said word and press the corresponding keys. If for any reason such as disambiguity between two words having closed pronunciation and similar key presses, the recognition system selects a non-desired word, then the user may re-speak said desired word without re-pressing said corresponding keys. The system then, will select a word among the rest of candidates words corresponding to said key presses (e.g. excluding the words already selected) with highest probability corresponding to said speech. If the new selected word is yet not the desired one, the user may re-speak said word. this procedure may be repeated until either said desired word is selected by the system or there is no other candidate word. in this case, the user can enter said desired word by character by character entry system such as the one explained before.

It is understood that in word level, when correcting, the cursor should be positioned after said to-be-replaced word. For this purpose and for avoiding the ambiguity with character correction mode, when modifying a whole word (word correcting level), the user may position the cursor after said to-be-replaced word wherein at least one space character separates said word and said cursor. This is because for example, if a user wants to correct the last character of an already entered word, he should locate the cursor immediately after said character. By positioning the cursor after at least one space after the word (or at the beginning of the next line, if said word is the last word of the previous line), and speaking without pressing keys, the system recognizes that the user may desire to correct the last word before the cursor. For better result, it is understood that if the to-be-replaced word contains a punctuation mark (e.g. "." "?" "," etc.), the cursor may be replaced after an space after the punctuation mark. This is because in some cases the user may desire to modify an erroneous punctuation mark which must be situated at the end of a word. For this purpose the user may position the cursor next to said punctuation mark.

To avoid accidental corrections (e.g. the cursor is positioned somewhere in the text and someone speaks without intending a data entry), different methods may be applied. For example,

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a pause or non-text key may be used while a user desires for example, to rest during a text entry. Another solution is that after the cursor is positioned in a location in a text, after a laps of time (for example two seconds) no correction of the last word or character before the cursor is accepted by the system. If a user desires to correct said word or said character he may, for example, navigate said cursor (at least one move to any direction) and bring it back to said desired position. After the cursor is repositioned in the desired location, the time will be counted from the start and the user should start correcting said word or said character before said laps of time is expired.

Repeating a symbol

To repeat a desired symbol, the user, first presses the corresponding key and if required either speaks said symbol, or he speaks the position appellation of said symbol on its corresponding key or according to other symbols on said key. The system then selects the desired symbol. The user continues to press said key without interruption. After a predefined laps of time, the system recognizes that the user indents to repeat said symbol. The system repeats said symbol until the user stops pressing said key.

It should be noted that the above described method of correction and repeating of key symbol can be used in conjunction with any method of entry including but not limited to single/double tap, pressure sensitive keys, keys pressed simultaneously, keys pressed on only a potion thereof etc.

Telephone directory

To make a phone call, instead of dialing a number, a user may enter a to-be-called destination by any information such as name (e.g. person, company, etc.) and if necessary enter more information such as the said to-be-called party address, etc. A central directory, may automatically direct said call to said destination. If there are more than one telephone lines assigned to a said destination (e.g. party), or there are more than one choice for said desired information entered by the user, a corresponding selection list (e.g. telephone numbers, or any other predefined assignments assigned to said telephone lines) may be transmitted to the caller's

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phone and displayed for example, on the display unit of his phone. Then the user may select a desired choice and make the phone call.

The above-mentioned method of calling (e.g. dialing), may permit to eliminate the need of calling a party (e.g., a person) by his/her telephone number. Therefor may eliminate (or at list reduces) the need of remembering phone numbers, carrying telephone books, or using an operator's aid.

Interactive directories using voice/speech

Voice directories are more and more used by companies, institutions, etc. This method of interaction with another party is a very time consuming and frustrating procedure for the users. Many people, by hearing a voice directory on the other side of the phone, disconnect the communication. Even when a person tries to interact with said system, it frequently happens that after spending plenty of time, the caller does not succeed to access a desired service or person. The main reason for this ambiguity is that when listening to a voice directory indication, many times a user must wait until all the options are announced. He (the user), many times does not remember all choices which were announced. He must re-listen to those choices.

Also many times the voice directory demands a data to be entered by a user. This data entry is limited in variation because of either the limited number of keys of a telephone keypad or the complexity of entering symbols through it.

The above-mentioned data entry method permits a fast visual interaction with a directory. The called party may transmit a visual interactive directory to the caller and the caller may see all choices almost instantly, and respond or ask questions using his telephone keypad (comprising the above-mentioned data entry system) easily and quickly.

Voice mails

Voice mails may also be replaced by text mails. This method is already in use. The advantage of the method of data entry described above is evident when a user has to answer or to write a massage to another party. The data entry method of the invention is also dramatically

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enhances the use of massaging systems through mobile electronic devices such as cellular phones. One of the most known use is in the SMS.

The number of electronic devices using a telephone-type keypad is immense. The data entry method of this invention permits a dramatically enhanced data entry through the keypads of said devices. Of course this method is not limited to a telephone-type keypad. It may be used for any keypad wherein at least a key of said keypad contains more than one symbol.

Multi-sectioned keypad

The size of a keypad using the above-mentioned data entry method, may still be minimized by using a keypad having multiple sections. Said keypad may be minimal in size (e.g. as large as the largest section, for example as large as of the size of an adult user's fingertip or the size of a small keypad key) in a closed position, and maximized as desired when the keypad is in open position (depending on the number of sections used and/or opened).

Theoretically, in closed position, the keypad may even have the size of a key of said keypad.

Fig 8 shows one embodiment of said keypad 800 containing at least three sections 801, wherein each of said sections contains one column of the keys of a telephone keypad. When said keypad is in open position, a telephone-type keypad 800 is provided. In closed position 802 said keypad may have the width of one of said sections.

Another embodiment of said keypad is shown in fig. 9. Said keypad 900 contains at least two sections 901-902 wherein a first section 901 contains two columns 911-912 of the keys of a telephone-type keypad, and a second section 902 of said keypad contains at least the third column 913 of said telephone-type keypad. When said keypad is in open position, a telephone-type keypad is provided. Said keypad, may also have an additional column 914 of keys arranged on said second section. In closed position 920 said keypad may have the width of one of said sections.

As shown in fig. 10, another embodiment of said keypad 1000 contains at least four sections 1001-1004 wherein each of said sections contains one row of the keys of a telephone keypad. When said keypad is in open position, a telephone-type keypad is provided. In closed

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position 1005 the length of said keypad may the size of the width of one row of the keys of said keypad.

Fig. 11 shows another embodiment of said keypad 1100 containing at least two sections 1101-1102 wherein a first section contains two rows of the keys of a telephone-type keypad, and a second section of said keypad contains the other two rows of said telephone-type keypad. When said keypad is in open position, a telephone-type keypad is provided. In closed position 1103, the length of the keypad may be as the size of the width of one row of the keys of said keypad.

The above-mentioned multi-sectioned keypad has already been described in patent applications already filed by the inventor.

By using the above-mentioned data entry method through a multi-sectioned keypad as described, a miniaturized easy to use full data entry keypad may be provided. Such keypad may be used in many device, specially those having a limited size.

Of course, the above-mentioned symbol configuration may be used on said multi-sectioned keypad.

Fig. 12 shows another embodiment of a multi-sectioned keypad 1200. The distance between the sections having keys 1201 may be increased by any means. For example, empty (e.g. not containing keys) sections 1202, may be provided between the sections containing keys. This will permit more enlarged the distance between the sections when said keypad is in open position. On other hand, it also permits to have a still thinner keypad in closed position 1203.

A data entry device having integrated keypad and mouse or point and click device

To enhance the data entry method through a keypad in general and through the keypad of this invention in particular, a point and click system, hereinafter a mouse, can be integrated in the back side of an electronic device having a keypad for data entry in its front side.

Fig. 13, shows an electronic device such a cellular phone 1300 wherein a user holds in palm of his hand 1301. Said user may use only one hand to hold said device 1300 in his hand and in the same time manipulate its keypad 1303 located in front, and a mouse or point and click device (not shown) located on the backside of said device. The thumb 1302 of said user may use

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the keypad 1303, while his index finger 1304 may manipulate said mouse (in the back). Three other fingers 1305 may help holding the device in the user's hand.

The mouse or point and click device integrated in the back of said device may have similar functionality to that of a computer mouse. Also several keys (e.g. two keys) of either the telephone-type keypad or among the additional keys of said device may be assigned to the mouse click functions. for example, keys 1308 and 1318 may function with the integrated mouse of said device 1300 and have the similar functionality of the keys of a computer mouse. Said keys may have the same functionality as the keys of a computer mouse. For example, by manipulating the mouse, the user may navigate a Normal Select (pointer) indicator 1306 on the screen 1307 of said device and position it on a desired menu 1311. As for a computer mouse, said user then, for example, may tap (click) or double tap (double click) on a predefined key 1308 of said keypad (which is assigned to the mouse) to for example, select or open said desired menu 1311which is pointed by said Normal Select (pointer) indicator 1306.

Because the display of mobile devices such as cellular phones has a small size, a rotating button 1310 may be provided in said device to permit to a user to, for example rotate the menu lists. For example, after a desired menu 1311 appears on the screen 1307, a user may use the mouse to bring the Normal Select (pointer) indicator on said desired menu and select it by using a predefined key such as one of the keys 1313 of the telephone-type keypad 1303 or one of the additional keys 1308 on said device, etc.

As for a computer, then the user may press said key to open the related menu bar 1312. To select a function 1313 of said menu bar1312, the user may maintain said key pressed and after bringing the Normal Select (pointer) indicator 1306 on said function, by releasing said key, said function may be selected.

Other functionalities similar to those of a computer may be provided by using said keypad and said mouse.

Also, instead of using said keys assigned to a mouse, a user may use a predefined voice/speech or other predefined behavior(s) to replace the functions of said keys. For example, after positioning the Normal Select (pointer) indicator 1306 on an icon, instead of pressing a key, the user may say "select" or "open" to select or open the application represented by said icon.

Fig. 14, shows an electronic device such as a mobile phone 1400. A plurality of different icons 1411-1414 representing different applications, are displayed on the screen 1402 of said

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device. To select and/or open one of the applications, as for computers, by using a mouse, a user may bring the a Normal Select (pointer) indicator 1403, on a desired icon 1411. Then said user may select said icon by for example pressing once, a predefined key 1404 of said keypad. To open the application represented by said icon, the user, for example, may double tap on a predefined key 1404 of said keypad.

The mouse integrated in the backside of an electronic device may be of any type. For example, Fig.15 shows the backside of an electronic device 1500 such as the ones shown in figs. 13-14. The mouse 1501, is similar to a conventional computer mouse. It may be manipulated, as described, with a user's finger. It may also be manipulated like a conventional computer mouse, by laying the device on a surface such as a desk and swiping said mouse on said surface.

Fig. 16, shows another conventional type of mouse (a sensitive pad) integrated on the backside of an electronic device 1600 such as the ones shown in figs. 13-14. The mouse 1601, is similar to a conventional computer mouse. It may be manipulated, as described, with a user's finger. in this example, preferably as described before, while holding the device in the palm of his hand, the user uses his index finger 1602 to use (e.g. to manipulate) said mouse. Accordingly to this position, the user uses his thumb (not shown) to manipulate the keys of a keypad (not shown) which is located in the front side (e.g. other side) of said device.

Mobile devices should preferably, be manipulated by only one hand. This is because while the users are in motion (e.g. being in a bus or in a train) the users may use the other hand for other purposes such as holding a bar while standing in a train or using one hand to hold a newspaper or a briefcase).

By implementing the mouse in the back of a device such as a mobile phone, the user may manipulate said device and to enter data with one hand. He can use simultaneously, both, the keypad and the mouse of said device.

Of course, if he desires, said user can use his both hands to manipulate said device and its mouse.

Another method of using said device is to dispose it on a surface such as on a desk and slide said device on said surface in a same manner as a regular computer mouse and enter the data using said keypad.

It is understood that the any type of mouse including the ones described before, may be integrated in any part of a mobile device. For example, a mouse may be located in the front side

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of said device. Also said mouse may be located on a side of said device and being manipulated simultaneously with the keypad by fingers explained before.

It should be noted that a mouse has been used through out this discussion, however any point and click data entry device such as stylus computer integrated in an electronic device and combined with a telephone-type keypad is within the contemplation of the present invention.

External integrated data entry unit

Also, an external integrated data entry unit comprising a keypad and mouse may be provided and used in electronic devices requiring data entry means such as keyboard (or keypad) and/or mouse. There may be provided an integrated data entry unit having the keys of a keypad (e.g. a telephone-type keypad) in front of said unit and a mouse being integrated within the back of said unit. Said data entry unit may be connected to a desired device such as a computer, a PDA, a camera, a TV, a fax machine, etc.

Figs. 19 shows a computer 1900 comprising a keyboard 1901, a mouse 1902, a monitor 1903 and other computer accessories (not shown). In some circumstances (e.g. when a user does not desire to sit down on a desk chair in front of a monitor and he prefers, for example, to lie down on his bed while interacting with said computer) instead of a large keyboard and/or corresponding mouse a user may utilize a small external integrated data entry unit. There may be provided an external data entry unit 1904 containing features such as keypad keys 1911 positioned on the front side of said data entry unit, a microphone which may be an extendable microphone 1906, a mouse (not shown) integrated within the back side of said data entry unit (described before). Said data entry unit may be (wirelessly or by wires) connected to said electronic device (e.g. said computer 1900). An integrated data entry system such as the one described before (e.g. using voice recognition systems combined with interaction of keys by a user) may be integrated either within the said electronic device (e.g. said computer 1900) or within said data entry unit 1904. Also a microphone may be integrated within said electronic device (e.g. computer). Said integrated data entry system may use one or both microphones located on said data entry unit or within said electronic device.(e.g. computer).

For a better view of while interacting, specially when interacting from far with an electronic device such as said computer 1900, a display unit 1905 may be integrated within said

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a entry unit such as said integrated data entry unit 1904 of this invention. When interacting from far with a monitor 1903 of said electronic device 1900, a user may have a general view of the display 1910 of said monitor 1903. A closed area 1908 around the arrow 1909 or another area selected by using the mouse on the display 1910 of said monitor 1903 may simultaneously be shown on said display 1905 of said data entry unit 1904. The size of said area 1908 may be defined by manufacturer or by the user. Preferably the size of said area 1908 may be closed to the size of the display 1905 of said data entry unit 1904. This may permit a closed and/or if desired a real size view of the interacting area 1908 to the user (e.g. by seeing said area on the data entry screen 1905). While having a general view of the display 1910 of the monitor 1903, a user may have a particular closed view of the interacting area 1908 which is simultaneously shown on the display 1905 of said data entry unit 1904. For example a user may use the keypad mouse (not shown, in the back of the keypad) to navigate the arrow 1909 on the computer display 1910. Simultaneously said arrow 1909 and the area 1908 around said arrow 1909 on said computer display 1910 may be shown on the keypad display 1905.

For an interaction such as opening a file, a user may for example, navigate an arrow 1909 on the screen 1910 of said computer an position it on a desired file 1907. Said navigated areas 1908 and said file 1907 may be seen on said data entry screen 1905. By having the display 1905 of said data entry unit 1904 closed to his eyes, a user can clearly see his interactions on the display 1905 of said data entry unit 1904 while having a general view on a large display 1910 of said electronic device 1900 (e.g. computer).

It is understood that said interaction area 1908 may be defined and vary according to different needs or definitions. For example, said interacting area may be the area around an arrow 1909 wherein said arrow is in the center of said area or said area is the area at the right, left, top, bottom , etc. of said arrow or any area on the screen of said monitor, regardless of the location of said arrow on the display of said monitor).

Fig. 20 shows a data entry unit 2000 such as the one described before being connected to a computer 2001. During a data entry such as a text entry, the area 2002 around the interacting point 2003 (e.g. cursor) is simultaneously shown on the keypad display 2004.

Figs. 21a-21b show an example of different electronic devices which may use the above described data entry unit. Fig. 21a shows a computer 2100 and fig. 21b shows a TV 2101. The data entry unit 2102 of said TV 2101 may also operate as a remote control of said TV 2101. For

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example, by using the mouse (not shown) situated in the back side of said data entry unit 2102, a user may locate a selecting arrow 2103 on the icon 2104 representing a movie or a channel and opening it by double tapping (double clicking) on a key 2105 of said data entry unit. Of course said data entry unit 2102 of said TV may also be used for data entry such as internet through TVs or sending massages through TVs, cable TVs, etc. In this case the integrated data entry system of this invention may be integrated within for example, the TV's modem 2106.

Extendable Microphone

An extendable and /or rotatable microphone may be integrated in electronic devices such as cellular phones. Said microphone may be a rigid microphone being extended towards a user's mouth.

With the advancement of the technology, new input systems and devices are coming to the market to permit easy interacting with instruments. Many of those input systems use voice/speech recognition system wherein a user speaks the data or commands to be input. Because it is a natural way to input data, voice recognition system is becoming very popular. Computers, telephones, toys, and many other instruments are equipped with this different kinds of data entry system using voice recognition systems.

Although this is a good method of input, it has an important shortcoming. It is not a discrete method of input. A user, usually, does not want others to hear what he speaks, and in the other hand people do not like other people's loud speaking.

To overcome (or at least reduce) significantly this problem, the user must speak quietly. To not cause misinterpretation of user's voice/speech by a voice recognition system, the microphone must be closed to user's mouth.

It is the subject of this invention to provide instruments using a user's voice as data, with a microphone extending from said instruments towards the user's mouth.

There are many advantages using such a microphone. One advantage of such a microphone is that by extending said microphone towards said user's mouth and speaking closed into it the voice/speech recognition system may better distinguish and recognize said voice/speech. Another advantage is that by positioning said microphone close to user's mouth (e.g. next to the mouth), a user may speak silently (e.g. whisper) into it. This permits an almost

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silent and a discrete data entry. Still, another advantage of said microphone is that because of being integrated in corresponding electronic device, in order to keep said microphone in a desired position (e.g. close to a user's mouth), a user may not have to hold said microphone by his hand(s). Also, said user does not have to carry said microphone separately from said electronic device.

By combining the features such as the enhanced keypad of the invention, the mouse, the extendable microphone and the data entry method in a manner such as the manners explained before, either in an electronic device or as an external unit to be connected to an electronic device, a completely enhanced data entry system may be provided. A user, may for example, by only using one hand, hold an electronic device such as a data entry device (e.g. mobile phone, PDA, et.), use all of the features such as the enhanced keypad, integrated mouse, and the extendable microphone, etc., and in the same time by using his natural habitudes (e.g. pressing keys of the keypad and in needed, speaking) provide a quick, easy, and specially natural data entry.

One of the most important applications of the extendable microphone is when the data entry systems of mobile communication devices combine use of keypad and voice/speech recognition system. In this method a user interacts with a key (for example by pushing it), and in the same time he may speak for example, a symbol on said key. In order to press a key containing a desired symbol, the user may need to see the keypad. He also may need to see the data on a display of the device. In the other hand, the user may prefer to speak said symbols quietly. The extendable microphone permits to position the mobile phone far from eyes, enough to see that keypad, and in the same time to have the microphone closed to the mouth, permitting to speak quietly.

As they many people are used to, they may hold their mobile phone in one hand, while pressing the keys of the keypad with a thumb of the same hand. The second hand may be used to either hold said hand around the microphone to reduce the outside noise, or to keep the microphone in an optimal relationship with the mouth.

If the microphone of an instrument is wireless, or the member connecting it with the instrument is made from non-rigid materials, the user may hold the microphone in a manner to position it at the palm side of his hand, between two fingers. Then by positioning the palm o said hand around the mouth he can significantly reduce the outside noise while speaking.

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It is understood that the user interface containing the data entry unit and the display, of an electronic device using a user's voice to input data, may be of any kind. For example, instead of a keypad it may contain a touch sensitive pad, or it may be equipped only with a voice recognition system without the need of a keypad.

Fig. 18, shows according to one embodiment of the invention, an electronic device 1800 such as a cellular phone or a PDA. As shown, the keypad 1801 is located in the front side of said device 1800. A mouse (not shown) is located in the backside of said device 1800, An extendable microphone 1802 is also integrated within said device. Said microphone may be extended and positioned in a desired position (e.g. next to the user's mouth) by a user. Said device may also contain a data entry method as described before. By using only one hand, a user may proceed to a quick and easy data entry with a very high accuracy. Positioning said microphone next to user's mouth, permits a better recognition of the voice/speech of the user by the system. Said user, may also speak silently (e.g. whisper) into said microphone. This permits an almost silent data entry.

In alternative embodiments of the present invention Figs.18b to 18c, show a mobile phone 1800 having a keypad 1801 and a display unit. The mobile phone is equipped with a pivoting section 1803 with a microphone 1802 installed at its end. By extending the microphone towards his mouth, the user may speak quietly into the phone and in the same time being capable to see the display and keypad 1801 of his phone and eventually use them simultaneously while speaking to microphone 1802.

Fig.18d, shows a rotating extendable microphone 1810 to permit a user to position the instrument at a convenient relationship to him, and in the same time by rotating and extending the microphone accordingly, to bring microphone 1810 close to his mouth or to a desired location. It must be noted that the member connecting the microphone to the instrument may have at least two sections, being extended/retracted according to each other and to the instrument. They may have folding, sliding, telescopically and other movement for extending or retracting.

Figs. 18e and 18f, shows an integrated rotating microphone 1820 being telescopically extendable. In this embodiment, the extendable section comprising microphone 1820 may be located in the instrument. When desired, a user may pull this section out and extend it towards his mouth. Microphone 1820 may also be used, when it not pulled out.

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According to another embodiment of the invention as shown in Figs. 18g and 18h, the extending member 1830 containing a microphone 1831, may be a section of a multi-sectioned device. This section may be used as the cover of said device. The section comprising the microphone 1831 may itself been multi-sectioned to be extendable and/or adjustable as desired.

According to embodiment shown in Fig. 18i, an extendable microphone 1840 as described before, may be installed in a computer or similar devices.

Also, according to another embodiment of the invention, a microphone of an instrument may be attached to a user's ring, or itself being shaped like a ring, and be worn by said user. This microphone may be connected to said instrument, either wirelessly or by wire. When in use, the user approaches his hand to his mouth and speaks.

It is understood that instruments shown in the drawings are shown as example. The extendable microphone may be installed in any instrument. It may also be installed at any location on extending section.

In communication devices, the extending section comprising the microphone may be used as the antenna of said instruments. In this case the antennas may be manufactured as sections described, and contain integrated microphones.

It must be noted that in addition to at least an extendable microphone, an instrument may comprise at least one additional regular microphone, wherein said microphones may be used separately or simultaneously with said extendable microphone.

It must be noted that the extendable member comprising the microphone may be manufactured with rigid materials to permit positioning the microphone in a desired position without the need of keeping it by hand. For better manipulation, the section comprising the microphone may also be manufactured by semi rigid or soft materials.

It must be noted that any extending/retracting methods such as unfolding/folding methods may be used.

As described before, the integrated keypad and/or the mouse and/or the extendable microphone of this invention may also be integrated within a variety of electronic devices such as a PDA, a remote control of a TV, and a large variety of other electronic devices. For example, by using said integrated keypad and mouse within remote control of a TV, a user may point on an icon, shown on the TV screen relating to a movie and select said movie by using a predefined key of said remote control.

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Also, as described, said integrated keypad and/or mouse and/or extendable microphone may be manufactured as a separated device and to be connected to said electronic devices.

Of course said keypad, alone or integrated with said mouse and/ or said extendable microphone, may be combined with a data and text entry method such as the data entry method of this invention.

Fig. 17 shows some of the electronic devices which may use the enhanced keypad, the enhanced mouse, the extendable microphone, and the data entry method of this invention.

An electronic device may contain at least one or more of the features of this invention. It may, for example, contain all of the features of the invention as described.

Data entry through a land line phone

The data entry method described before, may also be used in land-lined phones and their corresponding networks. As known, each key of a telephone keypad generates a predefined tone which is transmitted through the land line networks. There are twelve predefined tones assigned to twelve keys of telephone keypads. By using, a land line telephone and its keypad, for the purpose of a data entry such as entering text, there may be the need of additional tones to be generated. To each symbol, there may be assigned a different tone so that the network will recognize a symbol according to the generated tone assigned to said symbol.

A wrist-worn multi-sectioned data entry unit

Fig. 22a shows as example, different embodiments of a data entry units 2201-2203 of this invention as described before. To reduce the size of said data entry unit a multi-sectioned data entry unit 2202-2203 which may have a multi-sectioned keypad 2212-2222 as described before, may be provided. said multi-sectioned data entry unit may have some or all of the features of this inventions. It may also have an integrated data entry system described in this application. As example, the data entry unit 2202 comprises a display 2213 an antenna 2214 (may be extendable), a microphone 2215 (may be extendable), a mouse integrated in the beck of said data entry unit (not shown).

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An embodiment of a data entry unit of this invention may be carried on a wrist. It may be integrated within a wrist worn device such as a watch or within a bracelet such as a wristwatch band. Said data entry unit may have some or all of the features of the integrated data entry unit of this invention. This will permit to have a small data entry unit attached to a user's wrist. Said wrist-worn data entry unit may be used as a data entry unit of any electronic device. By connecting his wrist-worn data entry unit to a desired electronic device, a user for example, may open his apartment door, interact with a TV, interact with a computer, dial a telephone number, etc.. A same data entry unit may be used for operating different electronic devices. For this purpose, an access code may be assigned to each electronic device. By entering (for example, through said data entry unit) the access code of a desired electronic device a connection between said data entry unit and said electronic device may be established.

Fig. 22b shows an example of a wrist-worn data entry unit 2290 (e.g. multi-sectioned data entry unit having a multi-sectioned keypad 2291) of this invention (in open position) connected (wirelessly or through wires 2292) to a hand-held device such as a PDA 2293. Said multi-sectioned data entry unit 2290 may also comprise additional features such as some or all of the features described in this application. In this example, there are provided a display unit 2294 an antenna 2295, a microphone 2296 and a mouse 2297.

It is understood that said multi-sectioned keypad may be detached from the wrist worn device/bracelet 2298. For this purpose different detachment/attachment known to people skill in the art may be provided. For example, as shown in fig. 23a, a housing 2301 for containing said data entry device may be provided within a bracelet 2302. Fig. 23b shows said housing 2303 in open position. A detachable data entry unit 2304 may be provided within said housing 2301. Fig 23c shows said housing in open position 2305 and in close position 2306. In open position (e.g. when using said data entry unit), part of the elements 2311 (e.g. part of the keys and/or display, etc) of said data entry unit may lye down within the cover 2312 of said housing.

According to one embodiment of the invention, a device such as a wristwatch 2307 may be provided in the opposite side on the wrist within the same bracelet. For example, there may be provided a wristwatch band having a housing to contain a data entry unit. Said wristwatch band may be attached to any wrist device such as a wristwatch, a wrist camera, etc. The housing of the data entry device may be located on one side 2308 of a wearer's wrist and the housing of said other wrist device may be located on the opposite side 2309 of said wearer's wrist. To attach said

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wristband to a device such as a wristwatch the traditional wristwatch band attachment means 2310 (e.g. bars) may be provided.

The above mentioned wristband housing may also be used to contain any other wrist device. for example, instead of containing a data entry unit, said wrist housing may be adapted to contain a variety of electronic devices such as a wristphone.

There may be a lot of advantages when using a wrist-worn data entry unit of this invention. for example, a user may carry an electronic device in for example, his pocket, and having a display unit (may be flexible) of said electronic device in his hand. The interaction with said electronic device may be provided through said wrist-worn data entry unit. In another example, the wrist-worn data entry unit of this invention may be used to operate an electronic news display (PCT Patent Application No. PCT/US00/29647, filed on October 27, 2000, regarding an electronic news display is incorporated herein by reference).

Thus, while is shown and described and pointed out fundamental novel features of the inventions as applied to alternative embodiments thereof, it will be understood that various omissions and substitutions and changes in the form and details of the disclosed invention may be made by those skilled in the art without departing from the spirit of the invention. It is to be understood that the drawings are not necessarily drawn to scale, but that they are merely conceptual in nature. For example, instead of providing a separate pressure system to each key of a keypad, a single pressure sensitive system (e.g. a pressure sensitive pad) may be provided with all of them (e.g. a single large pad above or under the keys). Also a user may interact with a key by other means than his fingers. For example, said user may use a pen to press a key.

The data entry method of this invention may also use other data entry means. For example, instead of assigning the symbols to the keys of a keypad, said symbols may be assigned to other objects such as the fingers (or portions of the fingers) of a user. These subjects and the data entry method mentioned in this application, have already been described in detail in the incorporated reference PCT Patent Application, No PCT/US00/29647, filed on Oct.27, 2000.

Extendable Display Unit

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According to one embodiment of the invention an extendable display unit may be provided within an electronic device such as data entry unit of the invention or within a mobile phone. Fig. 24a shows an extendable display unit 2400 in closed position. This display unit may be made of rigid and/or semi rigid materials and may be folded or unfolded for example by corresponding hinges 2401, or being telescopically extended or retracted, or having means to permit it being expanded and being retracted by any method.

Fig 24b shows a mobile computing device 2402 such as a mobile phone having said extendable display 2404 of this invention, in open position, When open, said extended display unit may have the width of an A4 standard paper permitting the user to see and work on a real width size of a document while, for example, said user in writing a letter with a word processing program or browsing a web page.

The display unit of the invention may also be made from flexible materials. Fig 25a shows a flexible display unit 2500 in closed position.

It is understood that the display unit of the invention may also display the information on at least part of it's other (e.g. exterior} side 2505. This is important because in some situations a user may desire to use the display unit without expanding it.

Fig. 25b shows an electronic device 2501 having flexible display unit 2500 of the invention, in open position.

By having an electronic device such as the data entry unit of the invention, a mobile phone, a PDA, etc., having at least one of the enhanced features of the invention such as an extendable/non extendable display unit comprising a telecommunication means as described before, a mouse of the invention, an extendable microphone, an extendable camera, a data entry system of the invention, a voice recognition system, or any other feature described in this application, a complete data entry/computing device, which may be held and manipulated by one user's hand, may be provided. This is very important because as is well known that in mobile environment computing/data entry at least one of the user's hand must be free.

Extendable Camera

As described for extendable microphone, an electronic device may also be equipped with an extendable camera. For example, for the data entry system of the invention combining keys

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presses and lip reading (instead or in addition to voice/speech of the user) an extendable camera may be provided in corresponding electronic device or data entry unit..

Fig.26 shows a mobile computing device 2600 equipped with a pivoting section 2601. Said pivoting section may have a camera 2602 and/or a microphone 2603 installed at, for example, its end. By extending the camera towards his mouth, the user may speak to the camera and the camera may transmit images of the user's lips for example, during data entry of the invention using combination of key presses and lips. The user, in the same time may be capable to see the display and the keypad of his phone and eventually use them simultaneously while speaking to the camera. Of course the microphone installed on the extendable section may transmit the user's voice to the voice recognition system of the data entry system.

The extendable section 2601 may contain an antenna, or itself being the antenna of the electronic device.

Also, the extendable microphone and/or camera of the invention may be detachably attached to an electronic device such as a mobile telephone or a PDA. This is because in many situations manufacturers of electronic devices (such as mobile phones) do not desire to modify their hardware for new applications.

According to one embodiment of the invention, the external pivoting section comprising the microphone and/or a camera may be a separate unit being detachably attached to the corresponding electronic device. Fig. 27 shows a detachable unit 2701 and an electronic instrument 2700, such as a mobile phone, being in detached position. The detachable unit 2701 may comprise any one of a number of component, including but not limited to, a microphone 2702, a camera 2703, a speaker 2704, an optical reader (not shown) or other components necessary to be closed to the user for better interaction with the electronic instrument. The unit may also comprise at least one antenna or itself being an antenna. The unit may also comprise attachment and/or connecting means 2705, to attach unit 2701 to electronic device 2700 and to connect the components available on the unit 2701 to electronic instrument 2700. For attaching and connecting purposes, attachment and connecting means 2705 may be adapted to use the ports 2706 available within an electronic device such as a mobile phone 2700 or a computer, the ports being provided for connection of peripheral components such as a microphone, a speaker, a camera, an antenna, etc. It is understood that ports 2706 may be the standard ports such as a microphone jack or USB port, or any other similar connection means available in electronic

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instruments. In this case, the attachment/connecting means may, for example, be standard connecting means which plug into corresponding port(s) available within the electronic instrument.

It is understood that the attachment and/or connecting means of the external unit may be provided to have either mechanical attaching functionality or electrical/electronic connecting functionality or both. As shown in Fig. 27a, for example, the external unit 2701 may comprise a pin 2705 fixedly positioned on the external unit for mechanically attaching the external unit to the electronic instrument. The pin may also electrically/electronically connect for example, the microphone component 2702 available within the unit 2701 to the electronic instrument shown before. In addition to the pin, the external unit may contain another connector 2707 such as a USB connector, connected by wire 2708 to for example, a camera 2703 installed within the external unit 2701. In this case, the connector 2707 may only electronically/electrically connect the unit 2701 to the electronic instrument.

For better mechanical attachment more that one port may be used by attachment and connecting means of the external unit. For example, the attachment and connecting means may comprise two attachment means, such as two pins fixedly positioned on the external unit wherein a first pin plugs into a first port of the electronic instrument corresponding to for example an external microphone, and a second pin plugs into the port corresponding to for example an external speaker.

Fig. 27b shows the detachable external unit 2701 and the electronic instrument 2700 of the invention, in attached position.

After attaching the external unit 2701 to the electronic instrument 2700 (for example, by plugging the pin 2705 into corresponding port 2706) the user may adjust the external unit 2701 in a desired position by extending and rotating movements as described before in this application for extendable microphone and camera. Again, it must be noted that the detachable unit of the invention may have characteristics similar to those of the extendable section of the invention as described before for the external microphone and camera in this application. For example, the detachable unit 2701 of the invention may be multi-sectioned having at least two sections 2710-2711, wherein each section having movements such as pivoting, rotating and extending (telescopically, foldable/unfoldable), relating to each other and to the external unit. Attaching sections 2712-2714 may be used for these purposes.

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The detachable unit as described permits to add external/perpheral components to an electronic instrument and use them as they were part of the original instrument. This firstly permits to use the unit without holding the components in hand or attaching it to user's body (e.g. a headphone which must be attached to user's head) and secondly, it permits to add the components to the electronic instrument without obliging the manufacturers of the electronic instruments (such as mobile phones) to modify their hardware.

The data entry method of this invention may also use other data entry means. For example, instead of assigning the symbols to the keys of a keypad, said symbols may be assigned to other objects such as the fingers (or portions of the fingers) of a user. Also instead of (or in addition to) voice/speech input, the system may recognize the data input by reading (recognizing the movements of) the lips of the user in combination with/without key presses. The user may press a key of the keypad and speak a desired letter among the symbols on said key. By recognizing the movements of the user's lips speaking said letter combined with said key press, the system may easily recognize and input the intended letter.

Also as mentioned, example given in method of configuration described in this application were showed as samples. Variety of different configurations and assignment of symbols may be considered depending on data entry unit needed. The principle in this the method of configuration is to define different group of symbols according to different factors such as frequency of use, natural pronunciation, natural non-pronunciation, etc, and assign them accordingly assigning them priority rates. The highest priority rated group (with or without speaking) is assigned to easiest and most natural key interaction (e.g. a single press). This group also includes the highest ranked non-spoken symbols. Then the second highest priority is assigned to second less easier interaction (e.g. double press) and so on.

With continuous reference to data entry system described before, the assignment of symbols to the keys of a keypad may be made in manner to still more enhance the recognition by voice/speech or lip-reading systems. Fig. 28 shows a keypad 2800 wherein letter symbols having closed pronunciation are assigned to the keys of said keypad in a manner to avoid ambiguity between them. As shown, letters having closed pronunciations "c" & "d", "j" & "k", "m" & "n", "v" & "t", are separated and placed on different keys. This will help the speech recognition system to more easily recognize said letters. For example, to select the letter "c", a user may press the key 2801 and says "c". To select the letter "d", the user presses the key 2802 and says

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"d". Other letters having closed pronunciations such as "b" & "p", "t" & "d", "f" & "s", are also assigned to different keys.

Embedded speech recognition systems for small devices are designed to use memory as less as possible. Separating symbols having resembling pronunciation and assigning them to different keys, dramatically simplifies the recognition algorithms resulting the use of less memory.

With continuous reference to Fig. 28, as shown, the configuration of letters is provided in a manner to maintain the letters a-z in continuous order (e.g. a,b,c.....z). Configuration of symbols on the keypad 2800 is made in a manner to keep it as similar as possible to a standard telephone-type keypad. It is understood that this order may be changed if desired.

Also, separation of resembling lip-articulated symbols may help lip-reading (lip recognition) systems to more easily recognize them. For example, assigning letters "j" & "k" to different keys will dramatically ease their recognition.

It is understood that for recognizing a spoken symbol such as a letter, more than one image of user's lips at different times during speaking said letter may be provided to lip recognition/reading system.

Lip reading (recognition) system of the invention may use any image-producing and image-recognition processing technology for recognition purposes. For example, as mentioned before, a camera may be used to receive image(s) of user's lips while said user is saying a symbol such as a letter and is pressing the key corresponding to said symbol on the keypad. Other image producing and/or image capturing technologies may also be used. For example, instead of a camera, a projector and receiver of means such as light or waves may be used to project said means to the user's lips (and eventually, face) and receives back said means providing a digital image of user's lips (and eventually user's face) while said user is saying a symbol such as a letter and pressing the key corresponding to said symbol on the keypad.

The data entry system of the invention which combines key press and user behavior (e.g. speech) may use different behavior (e.g. speech) recognition technologies. For example, in addition to movements of the lips, the pressing action of the user's tongue on user's teeth may be detected for better recognition of the speech.

According to one embodiment of the invention, as shown in fig. 29, instead of (or in addition to) a camera, the lip reading system of the invention may use a touch/press sensitive

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component 2900 removabley mounted on user's denture and/or lips. Said component may have sensors 2903 distributed within its surface to detect a pressure action on any part of it permitting to measure the size, location, pressure measure, etc., of the impact between the user's tongue and said component. Said component may have two sections. A first section 2901 being placed between the two lips (upper and lower lips) of said user and a second 2902 section being located on the user's denture (preferably the upper front denture). An attaching means 2904 permits to attach/fix said component on user's denture.

Fig. 29a shows a sensitive component 2910 as described hereabove, being mounted on a user's denture 2919 in a manner a section 2911 of the component is located between the upper and lower lips of said user (in this figure, the component, the user's teeth and tongue are shown outside user's body). Said user may press the key 2913 of the keypad 2918 which contains the letters "abc", and speak the letter "b". By saying "b" the lips 2914-2915 of the user press said sensitive section 2911 between the lips. The system recognizes that the intended letter is the letter "b" because saying the two other letters (e.g. "ab") do not require pressing the lips on each other. If the user presses the key 2913 and pronounces the letter "c", then the tongue 2916 of the user will slightly press the inside portion 2912 of the denture section of the component located on the front user's upper denture. The system will recognize that the intended symbol is the letter "c", because other letters on said key (e.g. "bc") do not require said pressing action on said portion of the component. If the user presses the key 2913 and says the letter "a", then no pressing action will be applied on said component. Then the system recognizes that the intended letter is the letter "a". In other example, if the user presses the key 2917 and says the letter "j" the tongue of the user presses the inside upper portion of the denture section of the component. If the user presses the key 2917 and says the letter "l", then the tongue of the user will press almost the whole inside portion of the denture section of the component. In this case, almost the whole sensors distributed within the inside portion of the denture section of the component will be pressed and the system recognizes that the intended letter is the letter "l".

The above-mentioned lip reading/recognition system permits a discrete and efficient method of data input with high accuracy. This data entry system may particularly be used in sectors such as the army, police, or intelligence.

Hereafter an example of a letter input recognition system through a telephone-type keypad, according to one embodiment of this invention:

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ABC key

A	B	C
no pressure	lip section pressed	upper inside portion of the denture section is slightly pressed

DEF key

D	E	F
whole inside denture section is pressed	no pressure	lip section pressed

GHI key

G	H	I
upper inside portion of the denture section is strongly pressed	upper inside of portion of the denture section is slightly pressed	no pressure

JKL key

J	K	L
upper inside portion of the denture section is slightly pressed	no pressure	whole inside denture section is pressed

MNOkey

M	N	O
lip section pressed	whole inside denture section pressed	no pressure

PQRSkey

P	Q	R	S
lip section pressed (on sides)	lip section pressed slightly pressed	no pressure portion of the denture section is	upper inside

TUVkey

T	U	V
whole inside denture section is pressed	lip section pressed (on sides)	lip section pressed

WXYZkey

W	X	Y	Z (zed)
lip section pressed of denture section	upper inside portion	no pressure portion of the	whole inside is pressed

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denture is
pressed

It must be noted that the table above is only shown as an example to show the easiness of distinguishing the letters by saying a desired letter (while using the described hardware) and pressing the corresponding key. It is understood that other distinguishing parameters such as the timing of the pressure on the hardware (e.g. when saying "g" or saying "h", both being on the same key and maybe having similar pressure levels) based on this system may be taken in consideration by the recognition system and people skilled in the art. Also, saying other symbols such as numbers (e.g. 0-9) by the user and recognizing them may be considered by the above-mentioned system.

In addition, the sensitive component of the invention may be connected to processing device (e.g. a cellphone) wirelessly or by means wires. If it is connected wirelessly, the component may contain a transmitter for transmitting the pressure information. The component may further comprise a battery power source for powering its functions,

As described before, the invention combines key presses and speech for improved recognition accuracy. In one embodiment, a grammar is made on the fly to allow recognition of letters corresponding only to the key presses.

Usually, during data (e.g. text) entry by voice/speech, a microphone/transducer perceives the user's voice/speech and transmits it to a processor of a desired electronic device for recognition process by a voice/speech recognition system. A great obstacle (specially, in the mobile environment) for an efficient speech to data/text conversion by the voice/speech recognition systems is the poor quality of the inputted audio, said poor quality being caused by the outside noise. It must be noted that the microphone "hears" everything without distinction.

Many efforts have been made by researchers to distinguish and eliminate an outside noise from a desired audio. Until now those efforts have permitted to only partially reduce the outside noise but still much more work must be done to achieve an acceptable result. Unfortunately, the current noise cancellation/reduction technologies also reduce the quality of the desired audio, making said audio inappropriate for recognition by the voice/speech recognition systems.

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To reduce (or even completely eliminate) the outside noise during data entry into an electronic device by voice/speech input, without degrading the quality of said voice/speech input, an ear-integrated microphone/transducer unit positioned in a user's ear, can be provided. Said microphone/transducer may also permit a better reception quality of the user's voice/speech, even if said user speaks low or whispers.

As is well known, when humans speak, the bone vibrations caused by, and corresponding to, said speech are conducted to ear resulting the air vibrations corresponding to said speech in the inner ear and in the ear canal.

According to one method, said air vibrations may be perceived by an ear-integrated microphone positioned in the ear, preferably in the ear canal. According to another method, said ear bone vibrations, themselves, may be perceived from the inner ear by an ear-integrated transducer positioned in the ear.

Fig. 30 shows a microphone/transducer unit 3000 designed in a manner to be integrated within a user's ear in a manner that the microphone/transducer component 3001 locates inside the user's ear (preferably, the use's ear canal).

Preferably, in addition to microphone/transducer component 3001, said unit 3000 may also have hermetically isolating means 3002 wherein when said microphone 3001 is installed in a user's ear (preferably, in the user's ear canal), said hermetically isolating means 3002 may isolate said microphone from the outside (ear) environment noise, permitting said microphone 3001 to only perceive the user's voice/speech formed inside the ear. The outside noise which is a major problem for voice/speech recognition systems will dramatically be reduced or will even be completely eliminated.

The user may adjust the level of hermetically isolation as needed. For example, to cancel the speech echo in the ear canal said microphone may be less isolated from outside ear environment by slightly extracting said microphone unit from said user's ear canal. The microphone unit may also have integrated isolating/unisolating level means.

Said microphone/transducer 3001 may be connected to a corresponding electronic device, by means of wires 3003, or by means of wireless communication systems. The wireless communication system may be of any kind such as blue-tooth, infra-red, RF, etc

The above-mentioned, ear integrated microphone/transducer may be used to perceive the voice/speech of a user during a voice/speech-to-data(e.g. text) entry system using the data entry

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system of the invention combining key press and corresponding speech, now named press-and-speak (KIKS) technology. By pressing a key and saying the desired symbol (e.g. a letter) assigned to said key, as described before, the voice/speech recognition system tries to match said speech to one of speech patterns of only few symbols assigned to said key. In this case, even if an ear-integrated microphone/transducer has lower quality audio perception than a standard microphone, the quality of spoken symbols perceived by said ear-integrated microphone/transducer will still be fair enough to permit the voice/speech recognition system to easily recognize a spoken symbol among said few symbols on that key.

According to one embodiment of the invention, as shown in fig. 31, an ear-integrated microphone 3100 may be provided and be connected to a mobile electronic device such as a mobile phone 3102. As shown, the microphone 3101 is designed in a manner to be positioned into a user's ear canal and perceive the user's speech/voice vibrations produced in the user's ear when said user speaks. Said speech may then be transmitted to said mobile phone 3102, by means of wires 3103, or wirelessly.

By being installed in the user's ear and having hermetically isolating means 3104, said microphone 3101 will only perceive the user's voice/speech. The outside noise which is a major problem for voice/speech recognition systems will dramatically be reduced or even completely be eliminated. As mentioned before, the level of isolation may be adjustable, automatically, or by the user.

For example, when a user presses a key 3105 and speaks the letter "k" which is located on said key, the vibrations of said speech in the user's ear may be perceived by said ear-integrated transducer/microphone and be transmitted to a desired electronic device. The voice/speech recognition system of the invention has to match said speech to already stored speech patterns of a few symbols located on said key (e.g. in this example, "J, K, L, 5"). Even if the quality of said speech is not good enough (e.g. because the user spoke low), said speech could be easily matched with the stored pattern of the desired letter.

As just noted, another advantage of this system is that the user may speak low or even whisper. Because on one hand, the microphone is installed in the use's ear and directly perceives the user's voice without being disturbed by outside noise, and on the other hand the recognition system tries to match a spoken symbol to only few choices, even if a user speaks low, whispers,

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the quality of the user's voice will still be good enough for use by the voice/speech recognition system. For the same reasons the recognition system may be user-independent. Of course, training the system with the user's voice (e.g. speaker dependent method) will cause greatly better recognition accuracy rate by the recognition system.

In addition to the microphone/transducer, the ear-integrated unit may also contain a speaker located beside the microphone/transducer and also being integrated within the user's ear for listening purposes.

According to one embodiment of the invention, as shown in fig. 32, an ear-integrated microphone and speaker 3200 can be provided in a manner that the microphone 3201 installs in a first user's ear (as described here-above) and the speaker 3202 installs in a second user's ear.

The above specifications should not be construed as limiting the scope of the invention but merely describing some of the preferred embodiments of the invention. many variations are be considered within the scope of the present invention. For example, in the example of the ear-integrated unit of the Fig. 32, both ears may be provided by both, microphone and speaker components. In another example, when said ear-integrated unit is wirelessly connected to a corresponding electronic device, a buttery power source may be provided within said ear-integrated unit. Also for better speech reception quality, the ear-integrated microphone unit of the invention may also comprise at least an additional standard microphone situated outside of the ear (for example, on the transmitting wire). The inside ear microphone combined with the outside ear microphone may provide more audio signal information to the speech/voice recognition system of the invention. it must also be noted that the data entry system of the invention may use any microphone or transducer using any technology to perceive the inside ear speech vibrations.

As previously mentioned, a method of general data entry combining key press and speech (e.g. according to a user's voice or lip movements) has been explained in PCT application PCT/US00/29647, filed on October 27, 2000.

As described in said application, by pressing a key and speaking or not speaking a desired symbol such as a character among a group of symbols assigned to said key, said desired symbol

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may be selected. For example, for entering the word "morning" through a standard telephone-type keypad 3300 (see Fig 33) a user may

-press the key 3308 and say 'm'
-press the key 3308 and say 'o' ;
-press the key 3306 and say 'r' ;
-press the key 3308 and say 'n' ;
-press the key 3303 and say 'i' ;
-press the key 3308 and say 'n' ;
-press the key 3303 and say 'g'.

By speaking a word, letter by letter (or symbol by symbol), and pressing the corresponding keys, said word may be inputted.

The data entry system described in PCT/US00/29647 may permit a keyboard having reduced number of keys (e.g. telephone keypad) to act as a full-sized PC keyboard (e.g. one pressing action per symbol).

- **Word by Word Data Entry System**

To enhance the above-mentioned data entry system, a word level data entry system has been proposed in said PCT application. In said application, there was described that a user can enter a word by speaking said word and pressing the keys corresponding to the letters constituting said word.

The speech of each word in a language may be constituted of a set of phonemes(s) wherein said set of phoneme(s) comprises one or more phonemes. Fig. 34 shows as an example, a dictionary of words 3400 wherein for each entry (e.g. word) 3401, its character set (e.g. its corresponding chain of characters) 3402, relating key press values 3403 (e.g. using a telephone keypad such as the one shown in fig. 33), phoneme set 3404 corresponding to said word, and speech model 3405 (to eventually be used by a voice/speech recognition system) of said phoneme set are shown.

According to one method of speech (e.g. voice) recognition, when a user speaks a word, his speech may be compared with memorized speech models, and one or more best matched models will be selected by the system. According to another method of speech recognition, when a user,

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for example, speaks a word, his speech may be recognized based on recognition of a set of phonemes constituting said speech.

Then the word(s) (e.g. character sets) corresponding to said selected speech model(s) or phoneme-set may be selected by the system. If the selection contains one word, said word may become the final selection. If the selection comprises more than one word, then said words may be presented to the user (e.g. in a list printed at the display) and the user may select one of them by for example pressing a "select" key.

The above-mentioned method of recognition of words based on their speech is described only as an example. It is understood that other methods of recognition by speech may be considered by the people skilled in the art.

Recognizing a word based on its speech only, is not an accurate system. There are many reasons for this. For example, many words may have substantially similar, or confusing, pronunciations. Also factors such as the outside noise may result ambiguity in a word level data entry system. Inputting arbitrary words by voice requires complicated software, taking into account a large variety of parameters such as accents, voice inflections, user intention, or noise interaction. For these reasons speech recognition systems are based on recognition of phrases wherein for example, words having similar pronunciations may be disambiguated in a phrase according to the context of said phrase. Speech recognition systems based on recognition of phrases, also, require large amount of memory and CPU use, making their integration in small devices such as mobile phones, impossible at this time.

The press and speak technology invented by this inventor and described in different PCT and US patent applications, may solve the above-mentioned problems. In addition to/combination with a character by character entry system as described in said applications, a word-level data entry technology of the invention may provide the users of small/mobile/fixed devices with a natural quick (word by word) text/data entry system.

As mentioned, in the PCT application PCT/US00/29647, there was described that a user may speak a word while pressing the keys corresponding to the letters constituting said word. There was also mentioned that for this purpose a word dictionary data base may be used. According to that and by referring to the fig. 33, as an example, when a user speaks the word "card" and presses the corresponding keys (e.g. keys 3302, 3302, 3306, 3309 of the telephone-type keypad), the system may select from a dictionary database (e.g. such as the one shown in

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fig. 34), the words corresponding to said key presses. In this example, the same set of key presses may also correspond to other words such as "care", "bare", "base", "cape", and "case". The system then, may compare the user's speech (of the word) with the speech (memorized models or phoneme-sets) of said words which correspond to the same key presses and if one of them matches said user's speech, the system selects said word. If speech of non of said words matches the user's speech, the system then, may select the word (or words), among said words, that its (their) speech best match(es) said user's speech.

According to this method, the recognition system will select a word among only few candidates (e.g. 6 words, in the example above). As result the recognition becomes easy and the accuracy of the speech recognition system dramatically augments, permitting a general word-level text entry with high accuracy. It must also be noted that speaking a word while typing it is a human familiar behavior.

According to another embodiment of the invention, for entering a word, a user may press few (e.g. one, two, and if needed, more) keys corresponding to the characters of at least a portion of said word, (preferably, the beginning) and (preferably, simultaneously) speak said word. According to said key presses and said speech, the system may recognize the intended word. For this purpose, according to one method, for example, the system may first select the words of the dictionary database wherein the corresponding portion characters of said words correspond to said key presses, and compares the speech of said selected words with the user's speech. The system, then selects one or more words wherein their speech best matches with said user's speech. Selecting the words existing in a dictionary of words database according to at least few key presses corresponding to at least the beginning characters of said words, dramatically reduces the number of said selected words to be compared with the user's speech. This permits a very high accuracy of the input of a desired word. According to another method, for example, the system may first select the words of the dictionary wherein their speech best match said user's speech. The system then, may evaluate said at least the beginning characters (evaluating to which key presses they belong) of (the character sets constituting) said words with said user's corresponding key presses to finally select the character set(s) which match said user's key presses.

In the above-mentioned embodiments, if the selection contains one word, said word may become the final selection. If the selection comprises more than one word, then said words may

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be presented to the user (e.g. in a list printed at the display) and the user may select one of them by for example pressing a "select" key. It is understood that the systems of inputting a word by combination of key presses and speech and selection of a corresponding word by the system as just described, are demonstrated as examples. Obviously, for the same purpose, other systems based on the principles of the data entry systems of the invention may be known and considered by people skilled in the art.

The above-mentioned methods of speaking a word and pressing the keys corresponding to the characters constituting at least part of said word, and comparing said key presses with the key presses corresponding to the letters of the words in a dictionary of words, requires the use of a substantial amount of memory. Having stored the phoneme sets/ speech (e.g. models) of all of the words available in a language, a database of the chain of characters corresponding to said words available in one or more languages, and also having a data base of the key presses corresponding to said words available in said dictionary data base require large amount of memory.

Also, as described in the prior applications, according to data entry system of the invention a symbol, such as a punctuation mark, may be assigned to a key of the keypad and be inputted as default by pressing said key without speaking a speech. In the word level data entry system of the invention as described before, a user may finish to speak a word before finishing to enter all of its corresponding key presses. This may confuse the recognition system because the last key presses not covered by user's speech may be considered as said default characters. There are some solutions to overcome this problem. For example, a user may first speak a word and then press the corresponding keys. This may indicate to the system that the set of key presses accruing after the speech, correspond to said speech.

In another example, the system may exit the text mode and enter into another mode (e.g. special character mode) such as a punctuation/function mode, by a predefined action such as, for example, pressing a mode key. According to this example, in said text mode, the system may consider all of the key presses as being corresponding to the last speech. By pressing a key while the system is in a special character mode, a symbol such as a punctuation mark may be entered at the end (or any other position) of the word, also indicating to the system the end of said word.

As explained in said PCT applications, to a key of a keypad at least one special character such as punctuation marks, space character, or a functions, may be assigned. By a single press on

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a key of said keypad without speaking, a symbol such as a punctuation mark on said key may be inputted. A double press on the same key without speech may provide another (e.g. punctuation mark) symbol assigned to said key.

- **Data Entry System Based on sub-speeches**

There must be considered that when a user speaks a word while typing it, he naturally, may break said speech of said word into one or more sub-speech portions (e.g. while he types the letters corresponding to each sub-speech) according to for example, the syllables of said speech. For example, while typing the word "morning" using a keyboard such as a keypad, the user may naturally, first say a first sub-speech, "mor" and/while he presses the corresponding keys. Then the user may pronounce a following sub-speech, "ning" and type the corresponding keys. For easier demonstration, in this application, the word "sub-speech" is used for the speech of a portion of the speech of a word. For example, the word "perhaps", may be spoken in two sub speeches "per" and "haps". Also for example, the word "pet" may be spoken in a single sub-speech, "pet".

Also, for example, for entering the word "playing", the user may first pronounce the phonemes corresponding to the first syllable (e.g. "ple") while typing the keys corresponding to the letters "pla", and then pronounce the phonemes corresponding to the second syllable (e.g. "ying") while typing the set of characters "ying".

It must be noted that one user may divide a word into portions differently from another user. Accordingly, the sub-speech and the corresponding key presses, for each portion may be different. After completing the data (e.g. key press and sub-speech) entry of all portions of said word by said users, the final results will be similar.

In the above-mentioned example, said another user may pronounce the first portion as "plā" and press the keys of corresponding character set, "play". He then, may say "ing' and press the keys corresponding to the chain of characters, "ing". Also for example, a third user may enter the word "playing" in three sequences of sub-speeches and key presses. Said user may say, "ple", "yin", and "g" (e.g. spelling the character "g" or pronouncing the corresponding sound) while typing the corresponding keys. It is understood that the most natural way of dividing a word in different sequences of speech and key presses is that each sequence of speech correspond to a syllable of said word. Therefore, it must be noted that even though in many paragraphs of this

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application we note a syllable as a portion/sequence of a word, the data entry system of the invention applies to any form of division of a word in one or more portions.

According to the above-mentioned principles, for example, the word "trying' may be pronounced in two portions (e.g. syllables) "trī", and "ing". Also for example, the word "playground" may be divided and inputted in two portions (e.g. according to its two syllables), "plā", and "ground" (e.g. in many paragraphs of this application, phonemes (e.g speech sounds) are demonstrated by corresponding characters according to Webster's dictionary).

As it is shown in the examples above, part of the speech of different words in one (or more) languages may have similar pronunciations (e.g. being composed by a same set of phonemes). For example, the words, "trying", and "playing" have common sub-speech portion "ing" (or "ying") within their speech.

According to the above-mentioned principles, there may be created a method of data entry wherein by considering/memorizing predefined sets of phonemes/speech-models corresponding to sub-speeches of a word and considering at least part of the key presses corresponding to the character-sets assigned to corresponding sets of phonemes/speech-models, recognition of entire words in a press and speak data entry system of the invention may become effective. Fig. 35 shows an exemplary dictionary of phoneme-sets (e.g. sets of phonemes) 3501 corresponding to sub-speeches of a whole words dictionary 3502, and a dictionary of character sets 3503 corresponding to the phoneme-sets of said phoneme-set dictionary 3501, also comprising a dictionary of key press values (according to a telephone keypad) 3504 corresponding to said dictionary of character sets 3503 corresponding to said dictionary of phoneme-sets 3501. According to different embodiments of the invention, one or more of these data bases may be used by the data entry system of the invention.

Because in many cases, a same phoneme set (or sub-speech model) may be used in order to recognize different words (having the same sub-speech pronunciation in their speech), less memorized phoneme-sets/speech-models are required for recognition of entire words available in one or more dictionary of words, reducing the amount of the memory needed. This will result in assignment of reduced number of phoneme-sets/character-sets to the corresponding keys of a keyboard such as a telephone-type keypad and will, dramatically, augment the accuracy of the speech recognition system (e.g. of an arbitrary text entry).

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Fig. 36 shows exemplary samples of words of English language 3601 having similar speech portions 3602. As shown, four short phoneme sets 3602, may produce the speech of at least seven entire words 3601. It is understood that said phoneme sets 3602 may represent part of speech of many other words in English or other languages, too.

Based on the above-mentioned principles, a natural press and speak data entry system using reduced number of phoneme sets for entering any word (e.g. general dictation, arbitrary text entry) through a mobile device having limited size of memory (e.g. mobile phone, PDA) and limited number of keys (e.g. telephone keypad) may be provided. The system may also enhance the data entry by for example, using a PC keyboard for fixed devices such as personal computers. In this case, (because a PC keyboard has more keys), still more reduced number of phoneme sets will be assigned to each key, augmenting the accuracy of the speech recognition system. Hereafter, different detailed embodiments of the invention are described.

All Keys-At Least Part of the Phonemes

According to one embodiment of the invention, a user may divide the speech of a word into different sub-speeches wherein each sub-speech may be represented by a phoneme-set corresponding to a chain of characters (e.g. a character-set) constituting a corresponding portion of said word. By speaking each phoneme set and/while pressing the keys corresponding to the letters corresponding to said phonemes-set/character-set and repeating (in order, from fist to last) this procedure for all of (or at least part of) said sub-speeches, said entire word (e.g. in form of a chain of characters) may be inputted.

As shown in Fig. 33, for example, the letter "t" is located on the key 3301 of the keypad 3300. To said key different sets of phonemes such as "tē", "ti", "ta", "to", etc. (in this example, said phoneme-sets correspond to character-sets starting with said letter "t), and/or corresponding speech models may be assigned (see table of fig. 37). Pronouncing "tē" may correspond to different sets of letters such as "tea", "tee", or even "the" (for example, if the user is not an American/English native). As an example, to produce the word "teabag" a user may press the "t" key 3301 and say "tē" and continue to press the remaining keys corresponding to the remaining letters, "ea". According to one method, the system may compare the speech of the user with the speech (e.g. models) or phoneme-sets assigned to the first pressed key (in this example, "t" key

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3301). After matching said user's speech to one (or more) of said phoneme-sets/speech-models assigned to said key, the system selects on or more of the character-set(s) assigned to said phoneme set(s)/speech-model(s). As mentioned, in this example, a same speech may correspond to two different sets of characters, one corresponding to the letters "tea" (e.g. key presses value 832) and the other corresponding to letters "tee" (e.g. key presses value 833). The system compares (e.g. the value of) the keys pressed by the user with the (e.g. values of) the key presses corresponding to the selected character sets and if one of them matches the user key presses the system chooses it to eventually being inputted/outputted. In this example the letters "tea" may be the final selection for this stage. An endpoint (e.g. end of the word) signal such as a space key press may inform the system that the key presses and speech for the current entire word are ended.

It must be noted that a phoneme-set (e.g. "tak"), representing a chain of characters (e.g. tac), may preferably be assigned to the same key that another phoneme (e.g. "t"), representing the first character (e.g. "t") of said chain of characters is assigned. Also, a single phoneme (e.g. "th"), represented by a chain of letters (e.g. "th"), and representing a chain of characters (e.g. "th"), may preferably be assigned to the same key that another phoneme (e.g. "t"), representing the first character (e.g. "t") of said chain of characters is assigned.

In the above-mentioned example, the selection is not final (e.g. so the user does not provide said end-point). The user then may press the key 3302 corresponding to the letter "b" (e.g. the first character in the following syllable in the word) and says "bag" and continue to press the remaining keys corresponding to the remaining letters "ag". The system proceeds like before and selects the corresponding character set, "bag". The user now, signals the end of the word by for example, pressing a space key.

By saying "tē" and pressing the keys 3301, 3309, 3302 (e.g. key values "8, 3, 1") and then saying "bag" and pressing the keys 3302, 3302, 3303 (e.g. key values "1, 1, 4"), the word "teabag" may be produced. As noticed, the word "teabag" is produced by speech and key presses without having its entire speech model/phoneme-set in the memory. In fact the speech model/phoneme-set of the word "teabag" was produced by two other sub-speech models/phoneme-sets (e.g. "tē" and "bag") available in the memory, each representing part of said speech model/phoneme-set of the entire word "teabag" and together producing said entire speech model/phoneme-set. The speech models/phoneme-sets of "tē" or "bag" may be used as part of the speech-models/phoneme-sets of other words such as "teaming" or "Baggage", respectively.

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Although in this embodiment, the recognition accuracy is very high, it may happen that sometimes the final selection is an erroneous word which does not exist in the dictionary data base. For this reason, according to one embodiment of the invention, before inputting/outputting said word, the system may compare the final selection with the words of a dictionary of the word of the desired language. If said selection does not match a word in said dictionary, it may be rejected.

Also, according to one method, while pressing the corresponding keys of a portion of a word and speaking it, the user may speak in a manner that his speech covers said corresponding key presses during said entry. This will have the advantage that the user's speech at every moment corresponds to the key being presses simultaneously, permitting easier recognition of said speech. On the other hand, at the end of the entry of a word, a user may press any key without speaking. This may inform the system that the word is entirely entered (e.g. pressing a key and not speaking may be assigned to characters such as punctuation marks, PC functions, etc). This matter has already been explained in the PCT applications that have already been filed by this inventor).

After completion of the recognition procedures described above, if the selected output comprises more than one word, according to one embodiment, said words may be presented to the user (e.g. in a list printed at the display) and the user may select one of them by for example pressing a "select" key.

It must be noted that in some cases, recognizing part of the phonemes of one or more sub-speeches of a word (preferably, those at the beginning of said sub speeches), may be enough for recognition of the corresponding word in the press and speak data entry system of the invention.

According to one embodiment of the invention instead of considering all of the phonemes corresponding to a sub-speech of a word, only a few phonemes, (preferably those at the beginning of said sub-speech) may be considered and, preferably, assigned to the key(s) corresponding to the first letter of the character set(s) corresponding to said phoneme set. Said phoneme set may be used for the recognition purposes by the press and speech data entry system of the invention. According to this method, the number of the speech-models/phoneme-sets necessary for recognition of many entire words may dramatically be reduced. In this case, to each key of a keyboard such as a keypad, only few phoneme sets will be assigned permitting easier recognition of said phoneme sets by the voice/speech recognition system.

By using a speech recognition system for evaluation of all/few (preferably the beginning) characters of each sub-speech (preferably, the first sub-speech) of a word along with consideration

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of all of the key presses corresponding to all of the characters of said word, a word in a language may be recognized by the data entry system of the invention.

As mentioned before, different sets of phonemes (or speech models) according to sub-speeches of the words in a language may be considered and, preferably, memorized. Each of said sets of phonemes may correspond to a portion of a word at any location within said word. Each of said sets of phonemes may correspond to one or more sets (e.g. chain) of characters having similar/substantially-similar pronunciation. Said phoneme-sets may be assigned to the keys according to the first character of their corresponding character-sets. For example, the phoneme-set "tē", representing the character-sets "tee" and "tea", may be assigned to the key 3301 also representing the letter "t". If a phoneme-set represents two chains of characters each beginning with a different letter, then said phoneme-set may be assigned to two different keys each representing the first letter of one of said chain of characters. For example, for enhancing the accuracy of the voice recognition system of the invention, to the phoneme-set "and", character-sets "and" and "hand" having substantially similar pronunciations may be assigned. In this case, said phoneme-set may be assigned to two different keys, 3302, and 3303 representing the letters "a" and "h", respectively. It is understood that when pressing the key 3302 and saying "hand", the corresponding character-set, preferably, will be "and", and when pressing the key 3303 and saying "hand", the corresponding character-set, preferably, will be "hand".

Fig. 37 shows an exemplary table showing some of the phoneme sets that may occur at the beginning (or anywhere else) of a syllable of a word starting with the letter "t". The last row of the table also shows an additional example of a phoneme set and a relating character set for the letter "i".

Although phoneme sets having more phonemes (e.g. longer phoneme-sets such as, taps, tāke, tāst, etc.) may be considered, modeled, and memorized to help recognition of a word, in this embodiment wherein the user presses substantially all of the keys corresponding to the letters of a word, evaluating/recognizing few beginning characters of one or more portions (e.g. syllables) of said word by combining the voice/speech recognition and also using dictionary of words database and relating databases (such as key presses values) as shown in fig. 35, may be enough for producing said word. Obviously, when needed, longer phoneme sets may also be used for better recognition and disambiguity.

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As an example, by considering fig. 33 and also using the table of the fig. 37, to produce the word "title", a user may press the key 3301 corresponding to the letter "t" and say 'tī" and then press the remaining key presses corresponding to remaining letters "itle". At the end of the word the user may presse for example, an end-of-the-word key such as a space key. As shown in said table, to the phoneme set "tī", character sets such as "ti, ty, tie" are assigned. The first letter "t" is obviously, selected. Second letter will be "i", because of pressing the key 3303 (e.g. "y" is on the key 3304). The next key pressed is the key 3301 relating to the letter "t". In this case the character set "tie" possibility is rejected. So "ti" will be definitively selected. The system now considers "ti" along with the remaining key presses (values) 8 (e.g. "t, u, v"), 5 (e.g. "g, h, i"), and 3 (e.g. "d, e, f"). Comparing these input with a dictionary of words having corresponding key presses data base may reveal that the only word corresponding to these input is the word "title". The system then selects the word "title".

For better recognition, the user may speak more than one sub-speech of a word while pressing the corresponding keys. In this case, the system may consider said input by speech to better recognize the characters corresponding to said more than one sub-speech of said word.

By typing a word (having one or more portions/syllables) through a keyboard/keypad and speaking said word partially/entirely, in almost every case, recognition of few beginning characters of at least one of said portions/syllables (preferably, the first portion/syllable) of said word by the speech recognition system (helped by the evaluation of the corresponding key presses), combined with the evaluation of the key presses corresponding to the rest of the characters of said word, will produce said word.

In another example, to enter the word "taken" which comprises two sub-speeches/syllables, "tā" and "ken", when typing the first character "t" (key 3301), the user says "tā" and then presses the rest of the keys (e.g. "a") corresponding to the rest of the characters of the first syllable. The user then naturally proceeds to the next syllable and says "ken" while pressing the key 3305 corresponding to letter "k" and continues to press the remaining keys of said next syllable corresponding to the letters "en". He then may press, for example, a space key to inform the system of the end of data entry.

After completion of the recognition procedures described above, if the selected output comprises more than one word, said words may be presented to the user (e.g. in a list printed at the display) and the user may select one of them by for example pressing a "select" key.

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Shortcut: Less Key Presses Combined With at least Part of the Phonemes

Small mobile electronic devices having keypads with limited number of keys are commonly used worldwide. Users press the keys of said keypads by using the fingers (e.g. thumb, forefinger) of one hand. Even in a the above-mentioned data entry systems wherein each symbol is entered by a single pressing action on a corresponding key, the speed of data entry is slower than the speed of the data entry using a PC keyboard wherein the users usually use the fingers of both hands to press the keys of the keyboard.

To enhance the data entry system of the invention and to permit quicker data (e.g. text) entry, a macro-level data/text entry system have been proposed in the PCT application PCT/US00/29647. In said PCT application, there was mentioned that macros (e.g. a chain of letters/characters) can be assigned to a key of a keypad and inputted by a single pressing action combined with/without voice/speech. By assigning at least part of the characters of a word to a single key press an entire word may be inputted by few key presses. By applying this method within the press and speak data entry methods of the invention, a quick data entry for mobile environment/small devices may be provided. In this method, the number of key presses are usually less than the number of the characters of a word (except for the single characters and some words such as out-of-dictionary-words, which may require character by character entry).

As mentioned before, phoneme-sets corresponding to at least a portion of the speech (including one or more syllables) of words of one or more languages may be assigned to different predefined keys of a keypad. Also, as mentioned before, each of said phoneme-sets may represent at least one character-set in a language. As mentioned before, a phoneme-set representing a chain of character such as letters (e.g. a character-set), may preferably be assigned to the same key that another phoneme representing the first character of said chain of characters is assigned.

According to a preferred embodiment of the invention, a user may press the key(s) corresponding to, preferably, the first letter of a portion of a word while, preferably simultaneously, speaking said corresponding portion. For this purpose a user may divide a word to different portions (e.g. according to, for example, the syllables of the speech of said word). Speaking each portion/syllable of a word is called "sub-speech", in this application. It is

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understood that the phoneme-sets (and their corresponding character-sets) corresponding to said divided portions of said word must be available within the system.

According to this embodiment, for example, to enter the word "tiptop" which may be divided in two sub-speeches (e.g. in this example, according to its syllables) "tip" and "top", the user may first press the key 3301 (e.g. phoneme/letter "t" is assigned to said key) and (preferably, simultaneously) say "tip" (e.g. the first sub-speech of the word "tiptop"), then he may press the key 3301 and (preferably, simultaneously) say "top" (e.g. the second sub-speech of the word "tiptop"). Using the exemplary table in the fig. 37, set of characters "tip" is assigned to the set of phonemes "tip" and to the letter "t" on the key 3301. When the user presses the key 3301 and says 'tip", the system compares the speech of the user with all of the phoneme sets/speech_models which are assigned to the key 3301. After selecting one (or more) of said phoneme sets/models which best match said user's speech, the system selects the character sets which are assigned to said selected set(s) of phonemes. In the current example, only one character set (e.g. tip) was assigned to the phoneme set "tip". The system then proceeds in the same manner to the next portion (e.g. sub-speech) of the word, and so on. In this example, the character set "top" was the only character set which was assigned to the phoneme set "top". The system selects said character set. According to one embodiment of the invention, after selecting all of the character sets corresponding to all of the sub-speeches/phoneme-sets of the word, the system then may assemble said character sets (e.g. an example of assembly procedure is described in the next paragraph) providing different groups/chains of characters. The system then may compares each of said group of characters with the words (e.g. character sets) of a dictionary of words data base available in the memory. For example, after selecting one of the words of the dictionary which best matches to one of said groups of characters, the system may select said word as the final selection. In this example, after entering the second portion/syllable, the user presses for example, a space key, or another key without speaking to inform the system that the word wad entirely entered (e.g. pressing a key and not speaking may be assigned to characters such as punctuation marks, PC functions, etc). This matter has already been explained in the PCT applications that have already been filed by this inventor.). The system assembles the character sets 'tip' and "top' and produces a group of characters 'tiptop". If desired, the system then compares said group of characters with the words available in a dictionary of words data base of the system (e.g. an English dictionary) and if one of said words matches said group of

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characters the system inputs/outputs said word. In this example, the word "tiptop' exists in an English dictionary of the system. Said word is finally inputted/outputted.

Fig. 38 shows a method of assembly of selected character sets of the embodiments. For example, when a user tried to enter the word "envelope" in three sequences by using an embodiment of the invention, the system selected one to two character sets 3801 for each portion. As shown in fig. 39, the system then may assemble said character sets according to their respective position within said word, providing different group of characters 3802. Said group of characters 3802 will be compared with the words of the dictionary of words of the system and the group(s) of characters which match(es) one or more of said words will be finally selected and inputted. In this example, the character set 3803 (e.g. envelope"), is the only character set which matches a word in said dictionary. Said word is finally selected.

As mentioned, in some cases, the speech recognition system may select more than one phoneme set/speech model for the speech of all/part (e.g. a syllable) of a word. For example, if a user having a "bad" accent tries to enter the word "teabag" according the current embodiment of the invention, he first presses the key 3301 and simultaneously says "tē". The system may not be sure whether the user said "tē", or "thē", both assigned to said key. In this case the system may select different character sets corresponding to both phoneme sets. By using the same procedure, the user then enters the second portion of the word. In this example, only one character set, "bag", was selected by the system. The user finally, presses a space key. The system, then may assemble (in different arrangements) said character sets to produce different group of characters and compare each of said group of characters with the words of a dictionary of words data base. In this example the possible group of characters may be:

- "teebag"
- "teabag"
- "thebag"

The only group of characters that matches a word in a dictionary of words in for example, English language, is the word "teabag". This word may be considered as the final selection.

As just demonstrated, it may happen that the system selects more than one character set for each/some phoneme sets of a word. In this case, more than one group of characters may be assembled. Therefore, probably, more than one word of the dictionary may match said assembled groups of characters. In this case, said words may be presented to the user (e.g. in a list printed at

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the display) and the user may select one of them by for example pressing a "select" key. Also, if the system comprises enough memory and processing speed, a speech recognition system may be used to select one of said selected word according to, for example, the corresponding phrase context.

If a word/portion-of-a-word comprises many phonemes but its speech comprises a single syllable, according to one method, a phoneme-set/model comprising/considering all of said phonemes of said word/portion-of-a-word may be assigned to said word. For example, to enter the word "thirst", a phoneme set constituting of all of the phonemes of said world may be assigned to said word and to the (key of) letter "t" (e.g. positioned-on/assigned-to the key 3301). For example, the user presses the key 3301 and says "thirst". As explained before, the system selects the character set(s) (in this example, only one, "thirst") of sub-speech(es) (in this example, one sub-speech) of the word, and assembles them (in this example, no assembly). The system, then, may compare said characters set with the words of the dictionary of the word of the system and if said character set matches one of said words in the dictionary, then it selects said word as the final selection. In this case, the word "thirst" will be finally selected.

In some cases, specially when words are comprised of only one syllable, more than one key press for a syllable may be necessary for disambiguation of a word. For this purpose, different user-friendly methods may be implemented. For example, the word "fire", which originally comprises one syllable may be pronounced in two syllables comprising phoneme sets, "fī", and "re", respectively. The user in this case may first press the key corresponding to the letter "f" while saying "fī". He then, may press the key corresponding to the letter "r", and may say "re".

Also, for example, the word "times", may be pronounced in two syllables, "tī" and "mes", or "tīm" and "es". Also a word such as "listen", may be pronounced in two syllables, "lis", and "ten" which may require the key presses corresponding to letters "l' and "t", respectively. Also according to this principle, the word "thirst", may be divided in three portions, "thir", "s", and "t". For example, by considering that the phoneme set "thir" may already been assigned to the key comprising the letter "t" (e.g. key 3301), the user may press the key 3301, and say "thir', then he may press the key 3306 corresponding to the letter "s" and pronounce the sound of the phoneme "s" or speak said letter. He then, may press the key 3301 corresponding to the letter 't" and pronounce the sound of the phoneme "t' or speak said letter. At the end of the word, the user may press an end-of the-word key such as a space key 3307.

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Also for better disambiguation and also for reducing the number of phoneme-sets necessary for words having for example, the same speech at their beginning (e.g. "bring" and "brings"), in addition to pressing the first key of a syllable, and speaking said syllable, in some cases one or more character such as the last character(s) (e.g. "s", in this example) of a word/syllable may be pressed and spoken. For example, a user may press a key corresponding to the character "b" and say "bring" (e.g. phoneme-set "bring" was assigned to the key "3302). He then, may press the key corresponding to the letter "s", and either pronounces "s" or speaks the sound of the phoneme "s'. After providing an end-of-the-word signal such as pressing the "space" key, the system will considers the two data input sequences, and provides the corresponding word "brings" (e.g. its phoneme set was not assigned to the key 3302). It is understood that entering one or more single character(s) by using the method here, may be possible in any position (such as in the beginning, in the middle, or at the end) within a word. For not confusing the system, when a user enters a portion (of a word) comprising a letter, by the word/part-of-a-word entry system of the invention, he preferably may speak the sound of said letter. For example, instead of saying "em", the user may pronounce the sound of the phoneme "m". Also in a similar case, speaking saying "t", may be related by the system to the chain of characters "tea', "tea" and the letter "t", while pronouncing the sound of the phoneme "t', may be related to only the letter "t".

As described before, for better disambiguation, a word/portion-of-a-word/syllable-of-a-word/sub-speech-of-a-word (such as "thirst" or "brings") having substantial number of phoneme sets may be divided into more than one portion wherein some of said portions may contain one phoneme/character only, and entered according to the data entry system of the invention. Also as mentioned, according to this approach, multiple phoneme-sets wherein each comprising fewer number of phonemes may replace a single phoneme-set comprising substantial number of phonemes, for representing a portion of a word (e.g. a syllable). Also as described before, dividing the speech of a long portion (e.g. long syllable comprising substantial number of phonemes) of a word into shorter sub-speech/phoneme-set portions, will reduce the total number of phoneme-sets necessary for recognition of all of the words available in a dictionary data base. As also described before, this will permit to assign less phoneme-sets to each key of the keyboard/keypad.

According to one embodiment of the invention, based on the above-mentioned principles, to each key of a keyboard/keypad, short phoneme-sets comprising few phonemes may be assigned.

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For this purpose, for example, if a phoneme-set starts with a consonant it may comprise following structures/phonemes:

- only said consonant
- said consonant at the beginning, and at least one vowel after that
- said consonant at the beginning, at least one vowel after said consonant, and one consonant after said vowel(s)

If the phoneme-set starts with a vowel, it may have the following structures:

- at least one vowel at the beginning
- said vowel(s) at the beginning, and one consonant after that

Fig. 40 shows some examples of the phoneme-sets 4001 for the constant "t" 4002 and the vowel "u' 4003, according to this embodiment of the invention. Columns 4004, 4005, 4006, show the different portions of said phoneme-sets according to the sound groups (e.g. consonant/vowel) constituting said phoneme-set. Column 4007 shows corresponding exemplary words wherein the corresponding phoneme-sets constitute part of the speech of said words. For example, phoneme set "tār" 4008 constitutes portion 4009 of the word "stair". Column 4010 shows an estimation exemplary of the number of key presses for entering the corresponding words (one key press corresponding to the first character of each portion of the word according to this embodiment of the invention). For example, to enter the word 'until" 4011, a user will first press the key 3301 (see fig. 33) corresponding to the letter "u" and preferably simultaneously, says "un". He then presses again the key 3301 corresponding to the letter "t", and also preferably simultaneously, says "til". To end the word, the user then informs the system by an end-of-the-word signal such as pressing a space key. The word until was entered by two key presses (excluding the end-of-the-word signal) along with the user's speech. According to the current embodiment based on the principles described before, a consonant phoneme which has not a vowel, immediately, before or after it, may be considered as a separate portion of the speech of a word. For example, the "s" at the beginning of the word "study" 4012, and the "s" in the middle of the word "understood" 4013 may follow this rule. This will extremely reduce the number of phoneme-sets necessary for entering most of the words available in a dictionary (e.g maybe around one hundred phoneme-sets per the beginning phoneme/character of a portion of a word may be enough for recognition of most of the words in for example, the English language, when using a telephone-type keypad). Fig. 40 shows as example, other beginning phonemes/characters such as "v" 4014, and "th" 4015 assigned to the key 3301 of a

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telephone-type keypad. For each of said beginning phonemes/characters, phoneme-sets according to the above-mentioned principles may be considered.

It is understood that if needed/desired longer sub-speech portions of a word, having more phonemes may also be considered with the short phoneme-sets of the system. Also for examples, phoneme sets representing more than one syllable of a word may also be considered and assigned, to a corresponding key as described. Also for easier recognition, as described in previous embodiments, to permit better recognition of the speech pronounced by the users that, in many cases, may be natives of non English spoken regions, character-sets corresponding to phoneme sets (such as "tō" and "tô") having ambiguously similar pronunciation, may be assigned to all of said phoneme-sets.

Same predefined (preferably, short) phoneme-sets/speech-models may permit the recognition and entry of words in many languages. For example, the phoneme set "sha", may be used for recognition of words such as:

"shadow", in English,
"chaleur", in French,
"shalom', in Hebrew,
"shabab", in Arabic,
"Geisha", in Japanese, Etc.

To each of said phoneme sets, corresponding character-sets in a corresponding language may be assigned. As mentioned before, by doing so, a powerful multi-lingual data entry system based on phoneme-set recognition may be provided. For this purpose one or more data bases in different languages may be available within the system. Different methods to enter different text in different languages may be considered.

According to one method, by having a common phoneme-sets data base and the corresponding character-sets database in many languages, for entering text in a desired language, a user may select a language mode by informing the system by a predefined means. For example, said user may press a mode key to enter into a desired language mode. In this case after entering a word by entering the portions of a said word according to a corresponding embodiment of the invention, the system will compare the selected corresponding groups/chains of assembled character-sets with the words of a dictionary of words corresponding to said selected desired language. After matching said group of characters with one or more words of said dictionary, the system selects said matched word(s) as the final selection to be inputted/outputted. If the selection contains one word, said word may become the final selection. If the selection comprises more than

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one word, then said words may be presented to the user (e.g. in a list printed at the display) and the user may select one of them by for example using a "select" key.

According to another method, all data bases in different languages available with the system will be used simultaneously, permitting to enter an arbitrary word entry in different languages (e.g. in a same document). For example, after entering a word by entering the portions of a said word according to one embodiment of the invention, the system may compare the selected corresponding groups of characters with the words of a all of the dictionaries of words available with the system. After matching said group of characters with the words available in different dictionaries available with the system, the system selects said matched word(s) as the final selection to be inputted/outputted. If the selection contains one word, said word may become the final selection. If the selection comprises more than one word, then said words may be presented to the user (e.g. in a list printed at the display) and the user may select one of them by for example using a "select" key.

In some languages such as Hebrew or Arabic, wherein most of the vowels are not presented by separate characters, the system may even work with higher accuracy.

Non comparison with the dictionary of words

The system may also work without the step of comparison of the assembled selected character-sets with a dictionary of word. This is useful for entering text in different languages without worrying about their existence in the dictionary of the words of the system. For example, if the system does not comprise a Hebrew dictionary of words, a user may enter a text in Hebrew language by using the roman letters. To enter the word "Shalom", the user will use the existing phoneme sets "sha" and "lom" and their corresponding character sets available within the system. A means such as a mode key may be used to inform the system that the assembled group of characters will be inputted/outputted or presented to the user for confimation without said comparison with a dictionary database. If more than on assembled group of characters has been produced, they will be may be presented to the user (e.g. in a list printed at the display) and the user may select one of them by for example pressing a "select" key.

In the word/part-of-a-word entry embodiments of the invention, if the inputted/outputted word is not the one desired by the user, a word-erasing function may be assigned to a key. Similar

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to a character erasing function (e.g. delete, backspace) keys, pressing a word-erase-key will erase, for example, the word before the cursor on the display.

According to another embodiment of the invention, most phoneme-sets of the system may preferably, have only one consonant. Fig. 41 shows some of them as example. According to this embodiment, for example, to enter the word "teabag" 4101, the user first presses the key 3301 while saying "tē". He then presses the key 3302 while saying "ba". He finally presses the key 3303 while saying "g" (or pronouncing the sound of the phoneme "g"). As in other embodiments, at the end of the word he may press a key such as space key.

For better response and to augment the accuracy of the system, an auto-correction software may be combined with the embodiments of the invention. Auto correction software are known by the people skilled in the art. For example, (by considering the keypad of fig. 33) when a user tries to enter the word "network", he first presses the key 3308 of the keypad to which the letter "n" is assigned and simultaneously says "net". To the same key 3308 the letter "m" is also assigned. In some situations, the system may misrecognize the user's speech as "met" and select a character set such as "met" for said speech. The user proceeds to entering the next syllable by pressing the key 3304 corresponding to the first letter, "w", of said syllable and says "work". The system recognizes the phoneme set "work" pronounced by the user and selects a corresponding character set "work". Now the system assembles the two selected character sets and gets the word "metwork". By comparing this word with the words existing in the dictionary of the words database of the system, the system may not match said assembled word with any of said words of said database. The system then will try to match said assembled word with the most resembling word. In this case, according to one hypothesis the system may replace the letter "m" by the letter "n", providing the word "network", which is available in said dictionary. According to another hypothesis, by considering that "m", and "n" may be misrecognized by the voice recognition system and both are located on a same key, the system may replace the phoneme set "met' by the "phoneme set "net' and select the character set "net' assigned to the phoneme set "net". Then, by replacing the character set "met" by the character set "net', the word 'network" will be assembled. Said word is available in the dictionary of the words of the system. It will finally be selected.

In another example, entering "that" may be recognized as "vat" by the system. Same procedure will disambiguate said word and will provide the correct word, "that".

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In another example, if the system does not match an assembled group of characters with a word of the dictionary, the auto-correction software of the system may evaluate the position of the characters of said assembled character-set (relating to each other) in a corresponding portion (e.g. syllable) and /or within said assembled group of characters, and tries to match said group of characters to a word of the dictionary. For example, if a character is missing within said chain/group of characters, by said comparison with the words of the dictionary, the system may recognize the error and output/input the correct word. For example, if a user entering the word "un-der-s-tand" (e.g. in 4 portions), forgets to enter the portion "s" of said word, one of the assembled group of characters may be the chain of characters "undertand". By considering the characters of said chain of characters and their position relating to each other in said chain, and comparing said chain of characters with the words of the dictionary, the system may recognize that the intended word is the word "understand" and eventually either will input/output said word or may present it to the user for user's decision. The auto-correction software of the system may, additionally, include part of, or all of the functionalities of other auto-correction software known by the people skilled in the art.

Words such as "to', "too", or "two", having the same pronunciation (e.g. and assigned to a same key), may follow special treatments. For example, the most commonly used word among these words is the word "to". This word may be entered according to the embodiments of the invention. The output for this operation may be the word "to" by default. The word "too', may be entered (in two portions "to" and "o") by pressing the key corresponding to the letter "t", while saying "tōō". Before pressing the end-of-the-word key, the user may also enter an additional character "o", by pressing the key corresponding to the letter "o", and saying "o". Now he may press the endpoint key. The word "too" will be recognized and inputted. To enter the word "two", the system may either enter it character by character, or assign a special speech such as "tro" to said word and enter it using this embodiment. Also for example, to enter "two", the user may press the key 3301 and pronounce a long "tōō ". To enter the digit "2", the user presses the corresponding key 3302, and pronounces said digit. It is understood that examples shown here are demonstrated as samples. other methods of entry of the words having substantially similar pronunciations may be considered by the people skilled in the art.

A very interesting issue has just been mentioned. For example, by saying "fīv" and pressing the key 3309 corresponding to the first letter of the word "five", the word "five" will be entered. Interestingly, by saying "fīv" and pressing the key 3305 corresponding to the digit "5", the

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digit "five" will be entered. By saying a word corresponding to two different symbols, and using key presses, the user intention is clarified. This is one of the shortcomings of the data entry by the speech alone wherein the user intention may not be considered by the voice/speech recognition system. Also for example, to a same digit, more than one speeches may be assigned. For example, to the digit "4", two speeches, "four", and "forty", may be assigned. A user may produce the number "45", by either saying "four", "five" while pressing the corresponding keys, or he may say "forty five" while pressing the same keys. Also when a user presses the key 3306 and says "seven", the digit "7" will be inputted. This is because to enter the word "seven", the user may press the key 3306, and say "se". He then may press the key 3301 and say 'ven".

In other languages such as French, wherein the speech of the digit "7", comprises one syllable, for disambiguation purpose, a custom made speech having two syllables may be assigned to the character set "sept". For example, the word "septo" may be created by a user and added to the dictionary of the words. This word may be pointed to the word "sept" in the dictionary. When a user enters the word "septo" (according to the current embodiment of the invention) the system will find said word in the dictionary of the words of the system. Instead of inputting/outputting said word, the system will input/output the word pointed by the word "septo". Said word is the word "sept". The created symbols pointing to the words of the dictionary data base may be arranged in a separate database.

According to another method, a digit may be assigned to a first mode of interaction with a key, and a character-set representing said digit may be assigned to another mode of interaction with said key. For example, the digit "7" may be assigned to a single pressing action on the key 3306 (e.g. while speaking it), and the chain of characters "sept" may be assigned to a double pressing action on the same key 3306 (e.g. while speaking it).

It must be noted that the sub-speech-level data entry system of the invention is based on the recognition of the speech of at least part of a word (e.g. sub speech of a word). Considering that many words in one or more languages may have common sub-speeches, by slightly modifying/adding phoneme sets and assign the corresponding characters to said phoneme sets, a multi-lingual data entry system may become available. For example, many languages such as English, German, Arabic, Hebrew, and even Chinese languages, may comprise words having portions/syllables with similar pronunciation.

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It is understood that a user may add new standard or custom-made words and corresponding speech to the dictionary database of the system. Accordingly, the system may produce corresponding key press values and speech models and add to corresponding databases.

As mentioned before, to enter a word, a user may press a key corresponding to the first character/letter of a first portion of a word and speak (the phonemes of) said portions. If said word is spoken in more than one portions, the user may repeat this procedure for each of the remaining portions of said word.

According to one embodiment of the invention, when the user presses a key corresponding to the first letter of a portion (such as a syllable) of a word and speaks said portion, the voice/speech recognition system hears said user's speech and tries to match at least part (preferably, at least the beginning part) of said speech to the phoneme sets assigned to said key. The best matched phoneme sets are selected and the corresponding character sets may be selected by the system. After entering the entire word by repeating the same procedure for each portion (e.g. syllable) of said word, one or more character sets for each portion (e.g. syllable) of said word may be selected, respectively. The system now, may have one or more character sets for each portion (e.g. syllable) of a word wherein each character set may comprise at least part of the (preferably, the beginning) characters of said syllables. The system then, will try to match each of said characters sets to the (e.g. beginning) characters of the corresponding syllables of the words of a dictionary of the words data base of the system. The best matched word(s) will be selected. In many cases only one word of the dictionary will be selected. Said word will be inputted/outputted. If more than one word available is selected, said words may be presented to the user (e.g. in a list printed at the display) and the user may select one of them by for example pressing a "select" key.

For example, by using the table of the fig. 37, and the keypad of the fig. 33, to enter the word "trying" (e.g. phonemes-sets "trĩ-ing), the user may first press the key 3301 and say "trĩ". The system matches the user's speech to the corresponding phoneme set assigned to the key 3301 and selects the corresponding character sets (e.g. in this example, "try", "tri"). The user then presses the key 3303 corresponding to the character "i" and says "ing". In this case, the system matches the beginning of the user's speech to the phoneme set "in" assigned to the key 3303 (e.g. phoneme set "ing" does not exist in the exemplary data base, therefore it is not assigned to said key) and selects the corresponding character set "in". The user now has finished to enter the word and he enters an endpoint (e.g. end of the word) symbol such as pressing a space key or pressing

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any key without speaking (e.g. pressing a key and not speaking may be assigned to characters such as punctuation marks, PC functions, etc. This matter has already been explained in the PCT applications that have already been filed by this inventor). The system now may create different groups of characters each comprising possible characters of at least part of the beginning characters of each portion/syllable of the desired word. In this example, two group of characters may be created. Said groups of characters are:

"tri - in "

and;

"try - in "

Only the second group of characters (e.g. "try in") corresponds to an existing word in the English dictionary wherein said word comprises the letters "try" at the beginning of its first syllable, and also comprises the letters "in" at the beginning of another (e.g. second) syllable of said word. Said word is the word "trying".

In this system the quantity of phoneme sets/speech models necessary for recognition of many entire words may dramatically be reduced. On the other hand the number of the sets of character representing said phoneme sets may be augmented but will not have a significant impact on the amount of memory needed.

In many cases only one of said assembled characters may match a word in the dictionary. Said word will be inputted/outputted. If more than one assembly of character sets correspond to words available in the dictionary, said words may be presented to the user (e.g. in a list printed at the display) and the user may select one of them by for example pressing a "select" key.

As mentioned before, the system may select a word according to one or more of said selected character/phoneme sets corresponding to speech/sub-speech of said word.

In some cases, the system may not consider one or more of said selected character/phoneme sets, considering that they were erroneously selected by the system. Also, according to the needs, the system may consider only part of (preferably, beginning) the phonemes/characters of a phoneme-set/character-set selected by the system. For example, if the user attempts to enter the word "demonstrating", in four portions "de-mons-tra-ting", and the system erroneously selects the character sets, "des-month-tra-ting", according to one recognition method (e.g. comparison of said character-sets with the words of the dictionary), the system may

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not find a word corresponding to assembly of said sets of characters. The system then, may notice that by considering the letters "de" (e.g. few begging letters) of the first selected character-set and the letters "mon" (few begging letters) of the second character-set, also considering the third and forth character sets, the intended word may be the word "demonstrating". Also as needed, the system may add characters to an assembled (of the selected character sets) chain of characters or delete characters from said chain of characters to match it to a best matching word of the dictionary. For example, if the user attempts to enter the word "sit-ting", in two portions, and the system erroneously selects the character sets, "si-ting", according to a recognition method (e.g. comparison of said character/phoneme sets with the words of the dictionary), the system may decide that a letter "t" must be added after the letter "i", within said chain of characters to match it to the word "sitting". In another example, if the user attempts to enter the word "mee-ting", in two portions, and the system erroneously selects the character sets, "meet-ting", according to a recognition method (e.g. comparison of said character/phoneme sets with the words of the dictionary), the system may decide that a letter "t" must be deleted after the letter "e", in said chain of characters to match it to the word "meeting".

Having a same phoneme at the end of a portion of a word (e.g. said word having more than one portion/syllable) and at the beginning of the following portion of said word may permit better recognition accuracy by the system.

According to one embodiment of the invention, for example, to phoneme-sets (assigned to a key) terminating with a phoneme such as a vowel, additional phoneme-sets comprising said phoneme-set and an additional phoneme such as a consonant at its end, may be considered and assigned to said key. This may augment the recognition accuracy. For example, by referring to Fig. 33, when entering the word "coming" comprising two portions "co-ming", the user may press the keys 3302 and say "co", then he may immediately press the key 3308 and say "ming". Because the first portion of the sub-speech is too short, if the phoneme-set "com" is not assigned to the same key 3302 wherein the phoneme-set "co" is assigned, while pressing said key and saying "co", it may happen that the system may misrecognize the speech of said portion by the user and select an erroneous phoneme-set such as "côl" (e.g. to which the character-set "call" is assigned). On the other hand if the phoneme-set 'com" is also assigned to said key, the beginning phoneme "m" of the portion "ming" would be similar to the ending phoneme "m" of the phoneme-set "com". In this case the system may select two phoneme-sets "com-ming" and their corresponding character-sets,

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(e.g. "com/come", and "ming" as example). After comparing the assembled character-sets with the words of the dictionary, the system may decide to eliminate one "m" in one of said assembled character-set and match said assembled character-set it to the word "coming" of the dictionary database.

To permit better recognition of the speech pronounced by the users that, in many cases, may be natives of non English spoken regions, character sets correspondingly assigned to phoneme sets (such as "vo" and "tho") having ambiguously substantially similar pronunciation, may be assigned to all of said phoneme sets. For example, to each of the phoneme sets "vo" and "tho", same (e.g. common) character-sets "tho", "vo", and "vau", etc., may be assigned, wherein in case of selection of said character-sets by the system and creation of different groups of characters accordingly, the comparison of said groups with the words of the dictionary database of the system may result in selection of a desired word of said dictionary.

Entering data such as text through a small keypad severely reduces the data entry speed. The data entry systems of the invention based on pressing a single key for each portion/syllable of a word, while speaking said portion/syllable dramatically augments the data entry speed. The system has also many other advantages. One advantage of the system is that it may recognize (with high accuracy) a word by pressing maybe a single key per each portion (e.g. syllable) of said word. Another great advantage of the system is that the users do not have to worry about misspelling/mistyping a word (e.g. by typing the first letter of each portion) which, particularly, in word predictive data entry systems result in misrecognition/non-recognition of an entire word. Also another great advantage of the system is that when a user presses the key corresponding to the first letter of a portion of a word, he speaks (said portion) during said key press. At the end of a word, the user may enter a default symbol such as a punctuation mark (assigned to a key) by pressing said key without speaking. As mentioned before, this key press may also be used as the end-of-the-word signal. For example, a user may enter the word "hi", by pressing the key 3303 and simultaneously say "hĩ". He then may press the key 3306 without speaking. This will inform that the entry of the word is ended and the symbol "," must be added at the end of said word. The final input/output will be the character set "hi,".

The data entry system described in this invention is a derivation of the data entry systems described in the PCTs and US patent applications filed by this inventor. The combinations of a character by character data entry system providing a full PC keyboard function as described in the previous applications and a word/portion-of-a-word level data entry system as described in said

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PCT application and here in this application will provide a complete fast, easy and natural data entry in mobile (and even in fix) environments permitting quick data entry through keyboards having reduced number of keys (e.g. keypads) of small electronic devices.

As mentioned before, the data entry system of the invention may use any keyboard such as a PC keyboard. Also as mentioned, according to the data entry system of the invention, a symbol on a key of a keyboard may be entered by pressing said key without speaking. The data entry system of the invention may optimally function with a keyboard such as a standard PC keyboard wherein a single symbol is assigned to a predefined pressing action on one or more keys. As is known by people using computer keyboards such as the one shown in Fig. 42, for example, by pressing a key 4201 of a PC keyboard 4200, the letter "b" may be entered. Also for example, by pressing, simultaneously, the shift key 4202 and the key 4203, the symbol "#" may be entered.

By combining the data entry system of the invention with such a keyboard, on one hand a user may use said keyboard as usual by pressing the keys corresponding the desired data without speaking said data (this permits to enter single letters, punctuation characters, numbers, commands, etc., without speaking), and on the other hand, said user may enter a desired data (e.g. word/part-of-a-word) by speaking said data and pressing (preferably simultaneously) the corresponding key(s). For example, by using a keyboard such as a PC keyboard, to enter the letter "b", the user may press the key 4201 without speaking. To enter the word/syllable "band", the user may press the key 4201 and (preferably, simultaneously) say "band". Without the necessity of additional manipulation for changing modes, this, on one hand permits the user to work with the keyboard as usual, and on the other hand enables said user to enter a macro such as a word/part-of-the-word by speaking said macro and (preferably, simultaneously) pressing the corresponding one or more key. Also, for example, to enter the word "bible" constituting of two portions (e.g. two syllables) "bi" and "ble", a user (according to the principles of the data entry system of the invention, as described) may press the key 4201 and say "bi". He, then, may press the key 4201 and say "bel".

As mentioned before, the combinations of a character by character data entry system providing a full PC keyboard function as described in the previous applications and a word/portion-of-a-word level data entry system as described in said PCT application and here in this application will provide a complete fast, easy and natural data entry system.

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Speech of a word may be comprised of one or more sub-speeches also corresponding to single characters. For example, by referring to Fig. 33, when a user presses the key 3302 of the keypad 3300 and says "b", said data entered, may correspond to the letter "b", the word "be", and the word "bee". According to one embodiment, the system may assign the highest priority to the character level data, considering (e.g. in this example, the letter "b") as the first choice to eventually being inputted/presented to the user. If this is not what the user intended to enter, he then may either continue to enter the rest of the word, character by character, or he, for example, may press an end key to finish the entry of said word and then for example, manipulate a select-key to navigate between the other choices (e.g. "be", and "bee", in this example) and select the one he desires.

According to this method, also for example, while entering a word/chain-of-characters starting with a sub-speech corresponding to a single character and also eventually corresponding to the speech of a word/part-of-a-word assigned to said key, said character may be given the highest priority and eventually being printed on the display of a corresponding device, even before the end-of-the-word signal is inputted by the user. If the next part-of-the-speech/sub-speech entered, may still correspond/also-correspond to a single letter, this procedure may be repeated. If an end-of-the-word signal such as a space key occurs, said chain of characters may be given the highest priority and may remain on the display. Proceeding to a next task, such as entering the next word, will be considered as confirmation of acceptance of said chain of characters by the user. If the same data entered also corresponds to one or more words matched by the system, said words may also be available/presented to the user. If said printed chain of single characters is not what the user intended to enter, the user may, for example, use a select key to navigate between said words and select the one he desires.

With continuous description of this embodiment of the invention, if one of the data (speech/part-of-the-speech and/or key press) entered during entering a word/part-of-a-word, does not correspond to a single character and at the end-of-the-word signal has been inputted, then said displayed characters may be erased and instead, the word (corresponding to said data) with highest priority may be presented to the user. If the same data entered also corresponds to more words, said words may also be presented to the user, if he desires. In this case, the user may, for example, use a select key to navigate between said words and select the word he desires.

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By using a standard telephone keypad and the data entry of the system of the invention, there may be noticed that in English language there are no words with more than one syllable wherein the speech of all of said syllables also correspond to single letters on the corresponding keys.

There are several one-syllable words which correspond to a character on a corresponding key (e.g. "b, be, bee", or "t, tea, tee"). As mentioned, in those cases, said single letters may be given the highest priority.

According to the above-mentioned principles, for example:

- to enter "b", the user presses the key corresponding to said letter and says "b"
- to enter "bmx", the user presses the corresponding keys while pronouncing the corresponding letters
- to enter "bmx95", the user presses the corresponding keys and pronounces the corresponding characters
- to enter the word "before", the user may either press the corresponding keys while pronouncing the corresponding letters (e.g. character by character data entry), or for example, he first may press the key corresponding to letter "b" and (preferably, simultaneously) says "bē" and then he presses the key corresponding to the letter "f" and says "for". At the end he enters an end-of-the-word signal such as pressing a space key (e.g. word/portion-of-a-word data entry system).
-

The advantage of this method is in that the user may combine character by character data entry of the invention with the word/part-of-the-word data entry system of the invention, without switching between different modes.

The data entry system of the invention is a complete data entry system enabling a user at any moment to either enter arbitrary chain of characters comprising symbols such as letters, numbers, punctuation characters, (PC) commands, or enter words existing in a dictionary database.

According to one embodiment of the invention, the character-sets (corresponding to the speech of a word/part-of-a-word) selected by the system may be presented to the user before the procedure of assembly and comparison with the word of the dictionary database is started. For example, after each entry of a portion of a word, the character-sets corresponding to said entered data may immediately be presented to the user. The advantage of this method is in that immediately after entering a portion of a word, the user may verify if said portion of the word was misrecognized by the system. In this case the user may erase said portion and repeat (or if necessary, enter said portion, character by character) said entry until the correct characters

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corresponding to said portion are entered. Instead of erasing one by one the characters corresponding to an entered portion of a word, a key permitting to erase the entire characters corresponding to said portion may be provided. According to one embodiment of the invention, a same key may be used to erase an entire word and/or a portion of a word. For example, a single press on said key may result the erasing an entered portion of a word (e.g. a cursor situated immediately after said portion by the system/user indicates the system that said portion will be deleted). Obviously, each additional same pressing action may erase an additional portion of a word before said cursor. Also for example, a double press on said key may result in erasing all of the portions entered for said word (e.g. a cursor may be situated immediately after the portions to be deleted to informs the system that all portions of a word situated before said cursor must be deleted).

It may happen that a user desires to enter a chain of characters such as "systemXB5" comprising entire word(s) and single character(s).

According to one embodiment, after each entry of the data corresponding to a portion of said chain of characters or at the end of the entry of said entire chain of characters, the system may recognize that there is no word in the dictionary that corresponds to the selected character-sets corresponding to each portion of the word. In other hand the system may recognize that the assembly of some of consecutive selected character-sets, correspond to a word in the dictionary database while the others correspond to single characters. In this case the system will form an output comprising of said characters and words in a single chain of characters. In the example above, the word "systemXB5" may be entered in five portions, "sys-tem-x-b-5".

For example, by using a telephone keypad such as the one shown in fig. 33, the selected character-sets corresponding to the key press and speech of each portion may be as follow:

portion	sys	tem	x	b	5
character-set	sis/sys	tem/theme	x	b/be/bee	5

After assembling and comparing said character-sets with the words of a dictionary, the system may recognize that there is no word in the database matching the assemblies of said selected character-sets. Then the system may recognize that there are on one hand some portions corresponding to a single character, and on the other hands a single character-set or combination of successive other character-sets correspond to the word(s) in said database. The system then

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inputs/outputs said combination. In this example, the system may recognize that the assembly of a first and a second character-set "sys" and "tem", matches the word "system". The third and fifth character-sets correspond to the letter "x" and the number "5" respectively. The forth portion may correspond either to the letter "b", or to the words "be" and "bee".

The system may present to the user the following choices according their priority:

"systemxb5"
"systemxbe5"
"systemxbee5"

It is understood that for easing the recognition procedure of chain of characters comprising single characters and an entire word, the user may signal the start/end of said words/characters in said chain by a predefined signal such as pressing a predefined key.

According to one embodiment of the invention, a word being divided into more than one portions for being inputted, may preferably, be divided in a manner that, when possible, the speech of said portions start with a vowel. For example, the word "merchandize" may be divided in portions "merch-and-ize". Also for example, the word "manipulate" may be divided into "man-ip-ul-ate".

Also for better results, the selected character-sets corresponding to a phoneme-set corresponding to the speech of a portion of a word may consider the corresponding phoneme-sets when said character-sets are compared with the words of the dictionary database. For example, in English language, the corresponding character-sets for the phoneme-set "ār" may be character-sets such as "air", "ar", and "are". The corresponding character-sets for the phoneme-set "ăr" may be "are", and "ar". In this example, both phoneme-sets have similar character-sets, "are", and "ar". In case of misrecognition of the input, the system may attempt for a (e.g. reverse) disambiguation or correction procedure. Knowing to which phoneme-set a character-set is related, may help the system to better proceed to said procedure. For example, if the user intends to enter the word "ār", and the system erroneously recognizes said speech as "āb" (e.g. no meaning in this example). Relating character-sets for said erroneously recognized phoneme-set may be character-sets such as "abe", "ab". By considering said phoneme-set, the system will be directed towards the words such as "aim", "ail", "air", etc. (e.g. relating to the phoneme "ā"), rather than the words such as "an", "am" (e.g. relating to the phoneme "a").

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As mentioned before, phoneme sets representing more than one syllable of a word may also be considered and assigned to a key and entered by an embodiment of the invention (e.g. a phoneme-set corresponding to a portion of a word having two syllables may be entered by speaking it and pressing a key corresponding to the first character of said portion). Also as mentioned before, an entire word may be entered by speaking it and simultaneously pressing a key corresponding to the first phoneme/character of said word. Even a chain of words may be assigned to a key and entered as described. It may happen that the system does not recognize a phoneme-set (e.g. sub-speech), of a word having more than one sub-speech (e.g. syllable). In this case, two or more consecutive sub-speeches (e.g. syllables) of said word may be assigned to a key. Referring to fig. 33, for example, the word "da-ta" (e.g. wherein for example, the system misrecognises the phoneme-set "ta"), may be assigned to the key 3309. To enter said word, the user may press the key 3309 and say "data".

Press and speak data entry system of the invention permits to enter words, therefore an end-of-the-word procedure may automatically or manually being managed by the system or by the user, respectively.

As described before, there are different kinds of words being entered such as the:

- Words being entered in one portion by a single sub-speech/speech (e.g. words having one syllable) combined with the corresponding key press(es)
- Words being divided into more than one portion (e.g. words having more than one syllable, or words having one syllable but comprising multiple consecutive consonants or vowels) and being entered by sub-speech/speech corresponding to each portion combined with the corresponding key press(es) for each portion.

According to one embodiment of the invention, when an entire word corresponding to an existing word in a database of the words of a language is entered and the user enters an end-of-the-word signal such as pressing an "End-of-a-Word" key, then said word may be considered as the result of said data entered for being inputted/outputted. According to predefined system design/mode, the system may consider to add or not to add a character such as a space character at the end of said result. If the system or the user, do not enter a symbol such as a space character or an enter-function after said word, the next entered word/character will may be attached to the end of said word.

Example:

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"FOR" followed by an "End-of-the-Word" key (no spacing), results "FOR"

According to another embodiment of the invention, when an entire word corresponding to an existing word in a database of the words of a language is entered and the user enters additional symbols such as at least a space character, at least a punctuation mark, or at least an "enter" function at the end of said word, then said word and said additional symbols are entered.

Examples:
"FOR" followed by an " " results "FOR "
"FOR" followed by a "," results "FOR,"
"FOR" followed by an "." results "FOR."

According to one embodiment of the invention, when a user enters a word corresponding to an existing word in a dictionary database of the words of a language and then said user enters a next word (without entering an end-of-the-word signal such as a space character between said two consecutive words) also corresponding to an existing word in the dictionary, but the assembly of said two words does not correspond to a word in a dictionary of words database, then the system may automatically add a space character between said two words.

Example: "FOR" followed by "SOME" results "FOR SOME"

According to one embodiment of the invention, when a user enters a word corresponding to an existing word in a dictionary database of the words of a language and then said user enters a next word (without entering an end-of-the-word signal such as a space character between said two consecutive words) also corresponding to an existing word in the dictionary, and the assembly of said two words also correspond to a word in a dictionary of words database, then the system may present two choices to the user. A first choice may be the assembly of said two words (without a space character between them), and the second choice will be said two words comprising one (or more) space character between them. According to factors such as predefined system design, meaning of assembled and separate meaning of said words, phrase concept, etc., the system may give a higher priority to one of said choices and may print it on the display of the corresponding device for user confirmation. The user, then, will decide which one to select. For example, proceeding to the entry of the next word/character may inform the user that the first choice was confirmed.

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Example 1:
"FOR" followed by "GIVE" may result a first choice "FORGIVE"
"FOR" followed by "GIVE" may result a second choice "FOR GIVE"

Example 2:
"WORK" followed by "MAN" may result "WORKMAN"
"WORK" followed by "MAN" may also result "WORK MAN"

The above-mentioned procedure may apply to words such as the following word(s) also corresponding to the same principles.

Example:
"WORKMAN" followed by "SHIP" may results "WORKMANSHIP"
"WORKMAN" followed by "SHIP" may also result "WORKMAN SHIP"

According to one embodiment of the invention, when a first word corresponding to an existing word in a database of the words of a language is entered and the user enters a next word/portion-of-a-word to the end of said first word (with no space character between them) and said next word/portion does not corresponds to an existing word in the dictionary, but said next word/portion assembled with said first word corresponds to a word in the dictionary, then the system will automatically attach said first word and said second word/portion to provide a single word.

Example:
"FOR" followed by "CING" results "FORCING"
"FORGIVE" followed by "NESS" results "FORGIVENESS"

According to one embodiment of the invention, when a first entered word/portion-of-a-word does not exist in a database of the words of a language and the user enters a next word/potion-of-a-word, the system will assemble said first and next portions and compares said assembly with the words in a dictionary. If said assembly corresponds to a word in said dictionary, then the system selects said word and eventually presents it to the user for confirmation.

Example:
"SYS" followed by "TEM" results "SYSTEM"

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It is understood, that for better results, also for reducing the ambiguity, automatic end-of-the-word procedure may be combined with user intervention. For example, pressing a predefined key at the end of a portion, may inform the system that said portion must be assembled with at least one portion preceding it. If defined so, the system may also place a space character at the end of said assembled word.

Example 1: without user intervention, the following situation may occur:

"FOR" followed by "GIVE" may result a first choice, "FORGIVE"
"FOR" followed by "GIVE" may result also a second choice, "FOR GIVE"

Example 2: with user intervention, the following situation may occur:

"FOR" followed by "GIVE" followed " " may result one choice, "FORGIVE "

Entering the system into a manual/semi-automatic/automatic end-of-the-word mode/procedure may be optional. A user may inform the system by a means such as a mode button for entering into said procedure or exiting from it. This is because in many cases the user may prefer to manually handle the end-of-the-word issues.

As mentioned in a previous embodiment, the user may desire to, arbitrary, enter one or more words within a chain of characters. This matter has already been described in one of the previous embodiments of the invention.

Example: "91SYSTEMep7"

According to one embodiment of the invention, the system may present to the user, the current entered word/potion-of-a word (e.g. immediately) after its entry (e.g. speech and corresponding key press) and before an "end-of-the-word" signal has been inputted. The system may match said portion with the words of the dictionary, relate said portion to previous words/portions-of-words, current phrase context, etc., to decide which output to present to the user. The system may also, simply present said portion, as-it-is, to the user. This procedure may also enable the user to enter words without spacing between them. For example, after a selected result (e.g. word) presented to the user has been selected by him, the user may proceed to

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entering the following word/potion-of-a-word without adding a space character between said first word and said following word/portion-of-a word. The system will attach said two words.

Example:

"PRESS" followed by "SPEAK" results "PRESSSPEAK"

In addition to standard words in a dictionary, the word database of the system may also comprise abbreviations, words comprising special characters (e.g. "it's"), user's-made word, etc.

Referring to Fig. 33, for example, when a user presses the key 3303 and says "its", the system may select the words, "its", and "it's" assigned to said pressing action with said key and said (portion of) speech. The system may either itself select one of said words (e.g. according to phrase concept, previous word, etc.) as the final selection or it may present said selected words to the user for final selection by him. In this case the system, for example, may print the word with highest priority (e.g. "its") at the display of the corresponding device. If this is what the user desired to enter, then the user may use a predefined confirmation means such as pressing a predefined key or proceeding to entering the following data (e.g. text). Proceeding to entering the following data (e.g. text) may be considered by the system as the confirmation of the acceptance of the current proposed word. If said printed/proposed word is not what the user intended to enter, then the user may select the other selected words (e.g. "it's") by a selecting means provided within the system. According to another embodiment, when two words have a similar pronunciation, a phoneme-set representing of one of said words (e.g. the word "its" in the above-mentioned example) may be assigned to a first kind of interaction (e.g. a single press) with a key, and a similar phoneme-set representing the other word (e.g. the word "it's") may be assigned to a second kind of interaction (e.g. a double-press) with said key.

As mentioned previously, symbols (e.g. speech/phoneme-sets/character-sets/etc.) may be assigned to a mode/action such as double-pressing on for example, a key, combined with/without speaking. According to one embodiment of the invention, an ambiguous word(s)/part-of-a-word may be assigned to said mode/action. For example, the words "tom" and "tone" (e.g. assigned to a same key 3301) may cause ambiguity when they are pronounced by a user. One solution to disambiguate them may be in assigning each of them to a different mode/action with said key. For example, a user may single press (e.g. pressing once) the key 3301 and say "tom" (e.g. phoneme-set "tom" is

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assigned to said mode of interaction with said key) to enter the character-set "tom" of the example. Also said user may double-press the key 3301 and say "ton" (e.g. phoneme-set "ton" is assigned to said mode of interaction with said key) to enter the character-set "tone" of the example.

Also for example, a first phoneme-set (e.g. corresponding to at least part of the speech of a word) ending with a vowel may cause ambiguity with a second phoneme-set which comprises said first phoneme-set at the beginning of it and includes additional phoneme(s). Said first phoneme-set and said second phoneme-set may be assigned to two different modes of interactions with a key. This may significantly augment the accuracy of voice/speech recognition, in noisy environments. For example, the phoneme-set corresponding to the characters set "mo" may cause ambiguity with the phoneme-set corresponding to the characters set "mall" when they are pronounced by a user. For better disambiguation, each of them may be assigned to a different mode. For example, the phoneme-set of the chain of characters "mo" may be assigned to a single-press of a corresponding key and the phoneme-set of the chain of characters "mall" may be assigned to a double-press on said corresponding key.

According to another embodiment of the invention, the symbols (e.g. phoneme-sets) causing ambiguity may be assigned to different corresponding modes/actions such as pressing different keys. Although obviously it is not convenient, in the example above, the first phoneme-set (e.g. of "mo") may, for example, be assigned to a first key such as 3308, and the second phoneme-set (e.g. of "mall") may be assigned to another key.

Also, according to one embodiment of the invention, a first phoneme-set represented by a at least a character representing the beginning phoneme of said first phoneme-set may be assigned to a first action/mode (e.g. with a corresponding key), and a second phoneme-set represented by at least a character representing the beginning phoneme of said second phoneme-set may be assigned to a second action/mode, and so on. For example, the phoneme-sets starting with a representing character "s" may be assigned to a single press on the key 3301, and the phoneme-sets starting with a representing character such as "sh", may be assigned to a double press on, the same key 3301, or another key.

According to one embodiment of the invention, single letters (e.g. "a" to "z") may be assigned to a first mode/action (e.g. with a corresponding key) and words/portion-of-words may be assigned to a second action/mode. For example, a single letter may be assigned to a single press on a corresponding key (e.g. combining with user's speech of said letter), and a word/portion-of-a-

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word may be assigned to a double press on a corresponding key (e.g. combining with user's speech of said word/portion-of-a-word). According to this example, a user may combine a letter-by-letter data entry and a word/part-of-a-word data entry. For this purpose, on one hand, said user may provide a letter-by-letter data entry by single presses on the keys corresponding to the letters to be entered while speaking said letters, and on the other hand, said user may provide a word/part-of-a-word data entry by double presses on the keys corresponding to the words/part-of-words to be entered while speaking said words/part-of-words.

According to one embodiment of the invention, a means such as a button press may be provided for the above-mentioned purpose. For example, by pressing a mode button the system may enter into a character-by-character data entry system and by re-pressing the same button or pressing another button, the system may enter into a word/part-of-a-word data entry system. According to this embodiment, in a corresponding mode, a user may for example, enter a character or a word/part-of-a-word by a single pressing action on a corresponding key and speaking the corresponding character (e.g. letter) or word/part-of-a-word.

Also words/portion-of-words (and obviously, their corresponding phoneme-sets) having similar pronunciation may be assigned to different modes, for example, according to their priorities either in general or according to the current phrase context. In this case, for example, a first word/portion-of-word may be assigned to a mode such as a single press, and a second word/portion-of-word may be assigned to a mode such as a double press on a corresponding key, and so on. For example, words "by" and "buy" have similar pronunciations. A user may enter the word "by" by a single press on a key assigned to the letter "b" and saying "bī". Said user may enter the word "buy" (e.g. having lower priority, in general) by applying a double press on a key corresponding to the letter "b" and saying "bī". Also for example, the syllable/character-set "bi" (also pronounced "bī"), may be assigned to a third mode such as a triple tapping on a key, and so on. It is understood that at least one of said words/part-of-a-words may be assigned to a mode of interaction with another key (e.g. and obviously combined with the speech of said word/part-of-a-word).

As mentioned before, the different assembly of selected character-sets relating to the speech of at least one portion of a word may correspond to more than a word in a dictionary data base. Also as mentioned before, a selecting means such as a "select-key" may be used to select an intended word among those matched words. A higher priority (when there are more than one

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selected words) may be assigned to a word according to the context of the phrase to which it belongs. Also, higher priority (when there are more than one selected words) may be assigned to a word according to the context of at least one of the, previous and/or the following portion(s)-of -words/words.

According to one embodiment of the invention, each of said words/part-of-words may be assigned to a different mode (e.g. of interaction) of the data entry system of the invention. For example, when a user presses a key corresponding to the letter "b" and says "bē", two words "be" and "bee" may be selected by the system. To avoid the use of, for example, a "select-key", according to this embodiment, for example, a first word "be" may be assigned to a mode such as a single-press mode and a second word 'bee" may be assigned to another mode such as a double-press mode. According to this embodiment, in the example above, a user may single-press the key corresponding to "b" and say "bē" to provide the word "be". He also, may double-press the same key and say "bē" to provide the word "bee".

According to one embodiment of the invention, some of the spacing issues may also be assigned to a mode (e.g. of interaction with a key) such as a single-press mode or a double-press mode. For example, in an automatic spacing procedure, the attaching/detaching (e.g. of portions-of -words/words) functions may be assigned to a single-press or double-press mode. According to this embodiment, for example, a to-be-entered word/portion-of-a-word assigned to a double-press mode may be attached to an already entered word/portion before and/or after said already entered word/portion. For example, when a user enters a word such as the word "for" by a single press (e.g. while speaking it), a space character may automatically be provided before (or after, or both before and after) said word. If same word is entered by a double-press (e.g. while speaking it), said word may be attached to the previous word/portion-of-word, or to the word/portion-of-word entered after it.

In the example above, also for example, a double press after the entry of a word/portion-of-a-word may cause the same result.

According to one embodiment of the invention, for automatic spacing purposes, some of the words/part-of-the-words assigned to corresponding phoneme-sets, may include at least one space character at the end of them. In this case, when said space is not required, it may, automatically, be deleted by the system. Characters such as punctuation marks, entered at the end of a word may be located (e.g. by the system) before said space. For example:

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"word " followed by "," results "word, "

According to another embodiment of the invention, for automatic spacing purposes some of the words/part-of-the-words assigned to corresponding phoneme-sets, may include at least one space character at the beginning of them. In this case, when said space is not required (e.g. for the first word of a line), it may be deleted by the system. Because the space character is located at the beginning of the words, characters such as single letters or the punctuation marks may, as usual, be entered at the end of a word (e.g. attached to it).

According to one embodiment of the invention, during data entry including automatic spacing procedure, an action such as a predefined key press for attaching the current portion/word to the previous/following portion/word may be provided. For example, if a space is automatically provided between two (e.g. current and precedent) words/portions, a predefined action such as a key press may eliminate said space and attach said two words/portions. Example:

"for" + " give" + a predefined key-press, results "forgive"

According to another embodiment of the invention, a longer duration of pronunciation of a vowel of a word/syllable/portion-of-a-word, ending with said vowel, may cause a better disambiguation procedure by the speech recognition of the invention. For example, pronouncing a more significant laps of time, the vowel "ô" when saying "vo" may inform the system that the word/portion-of-a-word to be entered is "vô" and not for example, the word/portion-of-a-word "vôl".

According to one embodiment of the invention, by using a predefined means such as a predefined key pressing action, the data to be inputted may be capitalized. For example, by pressing a "Caps Lock" key the letters/words/part-of-words to be entered after that may be inputted/outputted in uppercase letters Another pressing action on said "Caps Lock" key may switch back the system to a lower-case mode. It is understood that said function (e.g. "Caps Lock") may be assigned to a spoken mode. For example, to provide the beginning of capitalization procedure a user may press the key corresponding to ""Caps Lock" symbol and

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pronounce a corresponding speech (such as "caps" or "lock" or "caps lock" etc.) assigned to said symbol.

According to one embodiment of the invention, a letter/word/part-of-word in lowercase may be assigned to a first mode such as a single press on a corresponding key (e.g. combined with/without the speech of said letter/word/part-of-word) and a letter/word/part-of-word in uppercase may be assigned to a second mode such as a double press on a corresponding key (e.g. combined with/without the speech of said letter/word/part-of-word). For example, to provide the word (e.g. character-set) "thought", a user may single press the key 3301 and say "thought". To produce the word (e.g. character-set) "THOUGHT", said user may double press the key 3301 and say "thought". This may permit to locally capitalize an input.

Also, according to a similar principle, a word/part-of-word having its first letter in uppercase and the rest of it in lowercase, may be assigned to a mode such as a single-press mode, double-press mode, etc.

According to one embodiment of the invention, as described in previous applications for character-by-character data entry, a letter/word/part-of-a-word may be assigned to more than one single action, such as pressing two keys simultaneously. For example, a word/part-of-a-word starting with "th", may be assigned to pressing simultaneously, two different keys assigned to the letters "t" and "h" respectively, and (eventually) speaking said word/part-of-a-word. Same principles may be assigned to words/parts-of-words starting with "ch", "sh", or any other letter of an alphabet (e.g. "a", "b", etc.).

According to one embodiment of the invention, words/part-of-a-words starting with a phoneme represented by a character may be assigned to a first mode such as a single press on a corresponding key, and words/part-of-a-words starting with a phoneme represented by more than one character may be assigned to a second mode such as a double-press on a corresponding key (which may be a different key). For example, words/part-of-words starting with "t" may be assigned to a single-press on a corresponding key (e.g. combined with the speech of said words), and words/part-of-words starting "th" may be assigned to a double-press, on said corresponding key or another key (e.g. combined with the speech of said words).

As mentioned before, depending on different embodiments of the invention, in different categories different dictionaries such as dictionary of words in one or more languages, dictionary of syllables/part-of-words (character-sets), dictionary of speech models (e.g. of syllables/part-of-

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words), etc., may be used. If necessary, two or more dictionaries in each or in whole categories may be merged. For example, a dictionary of words and a dictionary of part-of-words may be merged.

As described before, the data entry system of the invention may use any keyboard and may function with many data entry systems such as the "multi-tap" system, word predictive systems, virtual keyboards, etc. For example, on one hand, a user may enter text (e.g. letters, words) using said other systems by pressing keys of the corresponding keyboards, without speaking (e.g. as habitual in said systems) the input, and on the other hand, said user may enter data such as text (e.g. letters, words/part-of-words), by pressing corresponding keys and speaking said data (e.g. letters, words/part-of-words, and if designed so, other characters such as punctuation marks, etc.).

As mentioned before, the data entry system of the invention may use any voice/speech recognition system and method for recognizing the spoken symbols such as characters, words-part-of words, phrases, etc. The system may also use other recognition systems such as lip-reading, eye-reading, etc, in combination with user's actions recognition systems such as different modes of key-presses, finger recognition, fingerprint recognition, finger movement recognition (e.g. by using a camera), etc. These recognition systems and user's actions have been described in previous patent applications filed by this inventor. All of the features in said previous applications (e.g. concerning the symbol-by-symbol data entry) may also be applied to macros (e.g. word/portion-of word by word/portion-of-word) data entry system of the invention.

According to another embodiment of the invention, (as described in previous applications concerning the character-by-character entry level) the system may be designed so that to input a text a user may speak words/part-of-words without pressing the corresponding keys. On the other hand, said user may press a key to inform the system of the end/beginning of a speech (e.g. a character, a part –of-a-word, a word, a phrase, etc.), a punctuation mark, a function, etc.

The data entry system of the invention may also be applied to the entry of macros such as more-than-a-word sequences, or even to a phrase entry system. For example, a user may speak two words (e.g. simultaneously) and press a key corresponding to the first letter of the first word of said two words.

Although in many paragraphs in this application and in the previous applications, for data entry purposes, key presses combined with voice/speech of the user have been mentioned as

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examples, the data entry system of the invention may be applied to other data entry means (e.g. objects such as user's fingers to which characters, words/part-of-words, etc. may be assigned) and may use other use's behaviors and corresponding recognition systems. For example (as have already been described in previous patent applications filed by this inventor), instead of (or in combination with) analyzing pressing actions on keyboard keys, the system (by for example, using a camera) may recognize the movements of the fingers of the user in the space. For example, a user may tap his right thumb (to which for example, the letter "m, n, o", are assigned) on a table and say "milk" (e.g. the word "milk" is predefinitly assigned to the right thumb). In this example, said user's finger movement combined with said user's speech may be used to enter the word "milk".

In another example and according to same principles, said other data entry means may be a user's handwritten symbol (e.g. graffiti) such as a letter, and said behavior may be user's speech. For example, by using a pen-based device (e.g. PDA, stylus, etc.) using a hand-writing recognition system, a user may write a symbol such as a letter and speak said letter to enhance the accuracy of the recognition system of the system. In another example, said user may write at least one letter corresponding to at least a first phoneme of the speech of a word/part-of-a-word, and speak said word/part-of-a-word. When said user writes said letter, the hand-writing recognition system of the device recognizes said letter and relates it to the words-part-of-the-words and/or phoneme-sets assigned to said at least one letter (or symbol). When the system hears the user's voice, it tries to match it to at least one of said phoneme-sets. If there is a phoneme-set among said phoneme-sets which matches to said speech, then the system selects the character-sets corresponding to said phoneme-set. The rest of the procedure (e.g. the procedure of finding final words) may be similar to the ones described in different embodiments of this application and the applications filed before by this inventor.

According to one embodiment, the data entry system of the invention as described in this application and previous applications filed by this inventor, may be summarized as follow:

A predefined number of symbols representing at least the alphanumerical characters and/or words and/or part-of-a-words of at least one language, punctuation marks, functions, etc, may be assigned to a predefined number of objects, generally keys, said symbols are used in a data such as text entry system wherein a symbol may be entered by providing a predefined interaction with a corresponding objects in, the presence of at least an additional information

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corresponding to said symbol, said additional information, generally, being provided without an interaction with said object, wherein said additional information being, generally, the presence of a speech corresponding to said symbol or, eventually, the absent of said speech. and wherein, said objects may also be objects such as a user's fingers, user's eyes, keys of a keyboard, etc., and said user's behavior may be behaviors such as user's speech, directions of user's finger movements (including no movement), user's fingerprints, user's lip or eyes movements, etc.

Contrary to other data entry systems wherein many key presses are used to input few characters, the data entry system of the invention may use few key presses to provide the entry of many characters.

A Method of Configuration of Symbols on a Keypad

Different methods of configuration of symbols have been proposed in prior patent applications filed by this inventor. Fig. 43 shows a method of assignment of symbols to the keys of a keypad 4300.

As before, Letters a-z, and digits 0-9 are positioned on their standard position on a telephone-type keypad and may be inputted by pressing the corresponding key while speaking them.

Also as before, many punctuation characters and functions are assigned to the keys of said keypad and may be inputted by pressing (or double pressing) the corresponding keys without speaking them.

In this configuration, some of the punctuation marks such as "+" sign 4301, which are naturally spoken by the users, are assigned to some keys and may be inputted by pressing a the corresponding key and speaking them.

Also according to this arrangement some symbols such as the "-" sign 4302, which may have different meaning and according to a context, may be pronounced or not pronounced according to the context of the data, are positioned in a key, in two locations. They are once grouped with the symbols requiring speaking while entering them, and also grouped with the symbols which may not be spoken while entering them. To a symbol requiring speech, more than one speech may be assigned according to the context of the data. For example, the sign "-" 4302 assigned to the key 4303, may be inputted in different ways.

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- A user may press the key 4303 and say "minus"
- A user may press the key 4303 and say "dash"
- A user may press the key 4303 without speaking.

Interchanging ambiguous symbols on the keys of a keypad

As mentioned before, some symbols such as the letters assigned to a same key of a keypad/keyboard may have substantially similar pronunciations. This may cause ambiguity for the voice/speech recognition system of the invention. Fig. 43a shows a standard telephone-type keypad 4300. Pair of letters, "d" and ""e", assigned to the key 4301 may cause ambiguity to the voice/speech recognition system of the invention when said key is presses and one of said letters is pronounced. Pair of letters, "m" and "n" assigned to the neighboring key 4302 may also cause ambiguity between them when one of them is pronounced. On the other hand, letters "e" or "d" may easily be distinguished from the letters "m" or "n". By interchanging the assignment of one of the letters of each pair to the corresponding key of the other pair, the recognition problem of said four letters (e.g. by using the press and speak data entry system of the invention) will be solved. This may slightly modify the alphabetical order configuration of a keypad, but will dramatically augment the accuracy of the data entry. Fig. 43b shows a keypad 4310 after said modification.

Automatic Spacing Method

As previously mentioned, an automatic spacing procedure for attaching/detaching of portions-of-words/words may be assigned to a mode such as a single-press mode or double-press mode. As already described, a user may enter a symbol such as at least part of a word (e.g. without providing a space character at its end), by speaking said symbol while pressing a key (e.g. to which said symbol is assigned) corresponding to the beginning character/phoneme of said symbol (in the character by character data entry system of the invention, said beginning character is generally said symbol). According to said procedure, also for example, a user may enter a symbol such as at least part of a word (e.g. including a space character at its end), by speaking said symbol while double-pressing said key corresponding to the beginning

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character/phoneme of said symbol. In data entry systems requiring many key presses to enter a word, automatic spacing may be particularly beneficial.

According to the above-mentioned principles, for example, in a character-by-character data entry system of the invention, a character may be entered and attached to the previous character, by speaking/not-speaking said character while, for example, single pressing a corresponding key. Same action including a double-pressing action may cause to enter said character and attach it to said previous character, but also may add a space character after the current character. The next character to be entered will be positioned after said space character (e.g. will be attached to said space character). For example, to enter the words "see you ", a user may first enter the letters "s" and "e" by saying them while single pressing their corresponding keys. Then he may say "e" while double pressing its corresponding key. The user then may enter the letters "y" and "o" by saying them while single pressing the corresponding keys. He, then, may say "u" while double pressing the corresponding key.

According to another embodiment of the invention, instead of locating said space character after said current character, the system may locate said space character before said current character.

It is understood that instead of a space character, any other symbol (or group of symbols) may be considered after said character or before it. Of course, considering that a letter is part of a word, as previously described, same procedure may apply to part-of-a-word/word level of the data entry system of the invention. Again for example, a user may enter the words "prepare it", by first entering the portion "pre" by saying it while for example, single pressing the key corresponding to the letter "p". Then he may enter "pare" (e.g. including a space at the end of it) by saying "pare " while double pressing the key corresponding to the letter "p". The user then, may enter the word "it " (e.g. also including a space at the end of it) by saying it while double pressing the key corresponding to the letter "i".

QWERTY Configuration on a Keypad Having Reduced Number of Keys

According to one embodiment of the invention, the configuration and/or assignment of letters on a keypad may be according to the configuration of the letters on a QWERTY keyboard. This may attract many people who do not use a telephone-type keypad for data entry simply

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because they are not familiar with the alphabetical order configuration of letters on a standard telephone keypad. According to one embodiment of the invention, using such keypad combined with the data entry system of the invention may also provide better recognition accuracy by the voice/speech recognition system of the invention.

Fig. 44a shows as an example, a telephone-type keypad 4400 wherein alphabetical characters are arranged-on/assigned-to its keys according to the configuration of the said letters on a QWERTY keyboard. As shown, the letters on the upper row of the letter keys of a QWERTY keyboard are distributed on the keys 4401-4403 of the upper row 4404 of said keypad 4400, in the same order (relating to each other) of said letters on said QWERTY keyboard. The letters positioning on the middle letter row of a QWERTY keyboard are distributed on the keys of the second row 4405 of said keypad 4400, in the same order (relating to each other) that said letters are arranged on a QWERTY keyboard. And finally, Letters on the lower letter row of a QWERTY keyboard are distributed on the keys of a third row 4406 of said keypad 4400, in the same order (relating to each other) that they are positioned on a QWERTY keyboard.

With continuous reference to this embodiment, said alphabetical letters may be distributed on the keys of said keypad in a manner to locate ambiguous letters on different keys. Fig. 44b shows as an example, a QWERTY arranged keypad 4407 with minor modifications. In said keypad, the key assignment of the letters "M" 4408 and "Z" 4409, are interchanged in a manner to eliminate the ambiguity between the letters "M" and "N". In this example, the QWERTY configuration has been slightly modified but by using said keypad with the data entry system of the invention, the recognition accuracy may be augmented. It is understood that any other letter arrangement and modifications may be considered.

As shown, the QWERTY keypad of the invention may comprise other symbols such as punctuation characters, numbers, functions, etc. They may be entered by using the data entry system of the invention as described in this application and the previous applications filed by this inventor.

It must be noted that alphabetical letters having a QWERTY (or any other) arrangement may be assigned to the keys of any keyboard having reduced number of keys. Said keyboard may be combined and used with the data entry system of the invention. It is understood that for better accuracy, any standard arrangement may be modified.

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QWERTY Arrangement on Six Keys

According to one embodiment of the invention, the data entry systems of the invention may use a keyboard/keypad wherein alphabetical letters having a QWERTY arrangement are assigned to six keys of said keyboard/keypad. Obviously, words/part-of-words may also be assigned to said keys according to the principles of the data entry system of the invention.

As known, alphabetical letters are arranged on the keys of three rows of keys a PC keyboard according to a configuration order called QWERTY. Fig 45 shows a QWERTY keyboard 4500 wherein the letters A to Z are arranged on three rows of the keys 4507, 4508, 4509 of said keyboard. Usually, a user uses the fingers of his both hand for (touch) typing on said keyboard. By using the fingers of his left hand, a user for example, types the alphabetical keys as shown on the left side 4501 of said keyboard 4500, and by using the fingers of his right hand, a user for example, types the alphabetical keys situated on the right side 4502 of said keyboard 4500. According to these principles, it may be considered that the alphabetical keys of a QWERTY keyboard are arranged according to a three-row 4507, 4508, 4509 by two-column 4501-4502 table.

According to one embodiment of the invention, a group of six keys (e.g. 3 by 2) of a reduced keyboard may be used to duplicate said QWERTY arrangement of a PC keyboard on them and used with the data entry system of the invention. Fig. 45a shows as an example, six keys preferably arranged in three rows 4517-4519 and two columns 4511-4512 for duplicating said QWERTY arrangement on them. As an example, the upper left key 4513 contains the letters "QWERT", corresponding to the letters situated on the keys of the left side 4501 of the upper row 4507 of the QWERTY keyboard 4500 of the Fig. 45. The Other keys of said group of six keys follow the same principle and contain the corresponding letters situated on the keys of the corresponding row-and-side of said PC keyboard.

A user of a QWERTY keyboard usually knows exactly the location of each letter. A motor reflex permits him to type quickly on a QWERTY keyboard. Duplicating a QWERTY arrangement on six keys as described here-above, permits the user to touch-type (fast typing) on a keyboard having reduced number of keys. Said user may, for example, use the thumbs of both hands (left thumb for left column, right thumb for right column) for data entry. This looks like keying on a PC keyboard permitting fast data entry.

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It is understood that the left side and right side characters definition of a keyboard described in the example above is shown only as an example. Said definition may be reconsidered according to user's habitudes. For example, the letter "G" may be considered as belonging to the right side rather than left side.

According to one embodiment of the invention, a keypad having at least six keys containing alphabetical letters with QWERTY arrangement assigned (as described above) to said keys, may be used with the character-by-character/at least-part-of a word by at least-part-of a word data entry system of the invention. In addition to already-described advantages, said arrangement also comprises other benefits such as:

- letters situated on a same key are usually distinguishable by the voice/speech recognition system of the invention
- high accuracy of the data entry, extremely reduced number of letter keys, and the extremely familiar arrangement (e.g. QWERTY) of said letters on said keypad permit a user a fast data entry system without the need of frequently looking at the keypad or at the display unit of the corresponding device.

For better accuracy, modifications to this arrangement may be considered. For example, Fig. 45b, shows a keypad 4520 having at least six keys with QWERTY letter arrangement as described before, wherein letters "Z" 4521 and "M" 4522 have been interchanged in order to separate the letter "M" 4522 from the letter "N" 4523. It is understood that this is only an example, and that other forms of modifications may also be considered.

It must be noted that the QWERTY arrangement assigned to few number of keys as described above, is shown and described only as an example. Other configurations of alphabetical letters (in any language) may be assigned to any number of keys arranged in any key arrangement form on a any shape of keyboard (e.g. any keypad) and used with the press and speak data entry system of the invention. Also, it is understood that other symbols such as punctuation marks, numbers, functions, etc., may be distributed among said keys or other keys of a keypad comprising said alphabetical keys or other keys of said keypad and be entered according to the data entry system of the invention as described in this application and the applications filed before by this inventor.

According to one embodiment of the invention, still fewer number of keys may be used to contain alphabetical letters (and other symbols as described before) and being used with the press and speak data entry systems of the invention. Fig. 45c shows as an example, four keys

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4530 - 4533 having English alphabetical characters assigned to them. To keep this arrangement familiar, the QWERTY arrangement of the letters of the top two rows of the keypad 4520 of the Fig. 45b are maintained and the letters of the lowest row of said keypad 4520 of the fig. 45b are distributed within the keys of the corresponding columns (e.g. left, right) of said four keys 4530 - 4533 in a manner to maintain the familiarity of an "almost QWERTY" keyboard along with high accuracy of the voice recognition system of the invention. For example, letters "n" 4537 and "m" 4538 which have been located on the lowest right key of the keypad 4520 of the fig. 45b, are here separated and assigned, respectively, to the right keys 4533 and 4532 of the keypad 4530. It is understood that other symbols such as punctuation marks, numbers, functions, etc., may be distributed among said keys or other keys of a keypad comprising said alphabetical keys and be entered according to the data entry system of the invention as described in this application and the applications filed before by this inventor.

It is also understood that as far as the recognition accuracy is not affected, even fewer keys may be used to contain all alphabetical characters and be used with the press and speak data entry system of the invention. Fig. 45d shows two keys 4541-4542 (e.g. of a keypad) to which the English Alphabetical letters are assigned. Said keypad may be used with the press and speak data entry systems of the invention but ambiguity may arise for letters on a same key having substantially similar pronunciations.

Theoretically, all of the alphabetical letters may be assigned to a single key but this may extremely reduce the recognition accuracy.

Although, pressing a key and speaking a desired symbol assigned to said key may be enough for the entry of said symbol, for some reasons such as not desiring to speak some symbols, several methods such as the ones described in this application and in the previous applications concerning the data entry system of the invention may be provided. As described, a symbol may be entered by pressing a key without speaking said symbol. For example, by referring to the fig. 45c, a user may press the key 4530 without speaking to provide the space character. According to another method, a symbol may be entered by pressing a first key, keeping said key pressed and pressing a second key, simultaneously. According to another method, a special character such as a space character may be provided after a symbol such as a letter, by pressing a predefined key (e.g. corresponding to said special character) before releasing the key corresponding to said symbol.

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When having few keys for data entry, for faster data entry, the entry of a frequently used non-spoken symbol such as a space character may be assigned to a double press action of a predefined key without speaking. This may be efficient, because if the space character is assigned to a mode such as a single-pressing a button to which other spoken characters such as letters are assigned in said mode, after entering a spoken character, (for not confusing the voice/speech recognition system) the user has to pause a short time before pressing the key (while not speaking) for entering said space character. Assigning the space character to the double-press mode of a key, to which no spoken symbol is assigned to a double-press action, resolves that problem. Instead of pausing and pressing said key once, the user simply double-presses said key without said pause. As mentioned previously, another solution is to assign the spoken and non-spoken symbols to a different keys, but this may require more keys.

Also, it is understood that the QWERTY arrangement of the letters on a group of keys as described here-above, is provided as an example. Other configuration of symbols such as the alphabetical orders, other number of keys, or any key arrangements, may be considered. For example, according one embodiment of the invention, a keypad may contain two keys for assigning the most frequently used letters, and it may have other two keys to which less frequently used letters are assigned.

Today most electronic devices permitting data entry are equipped with a telephone-type keypad. The configuration and assignment of the alphabetical letters as described before may be applied to the keys of a telephone-type keypad.

Fig. 46a shows as an example, a telephone-type keypad 4600 wherein alphabetical letters having QWERTY configuration are assigned (e.g. as described before) to six keys of two neighboring columns 4601, 4602 of said keypad. By being on neighboring columns, entry of the letters by (the thumb of) a single hand becomes easier. Also as mentioned before, the user may use his both thumbs (e.g. left thumb for left column, right thumb for right column) for quick data entry. It is understood that other symbols such as punctuation marks, numbers, functions, etc., may be distributed among the keys of said keypad and be entered according to the data entry system of the invention as described in this application and the applications filed before by this inventor.

Fig. 46b shows another telephone-type keypad 4610 wherein alphabetical letters having QWERTY configuration are assigned (e.g. as described before) to six keys of two exterior

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columns 4611, 4612 of said keypad. By being on two exterior columns, entry of the letters by (the thumbs of) two hands becomes easier. Also as mentioned before, the user may use a single hand for data entry. In this example, minor modifications have been applied for augmenting the accuracy of the voice/speech recognition system of the invention. For example, letters "m" and "k" have been interchanged on the corresponding keys 4613, 4614 to avoid the ambiguity between the letters "m" and "n". Also, letters "f" and "z" have been interchanged on the corresponding keys to avoid the ambiguity between the letters "f" and "s". It is understood that other changes in the configuration may be considered. For faster data entry some characters such as the space character may be assigned to several keys 4615, 4616.

Fig. 46c shows another telephone-type keypad 4620 wherein alphabetical letters arrangement based on principles described before and showed in fig. 45c are assigned to four keys of said keypad.

It is understood that the QWERTY arrangement of letters on few (e.g. 6, 4, 2. etc.) keys of a keyboard such as a keypad is described as example. Other kind of letter arrangements such as alphabetical order may also be considered and assigned to few keys such as two/three/four/five/six, etc., keys.

Obviously, all of the data entry systems (and their corresponding applications) of the invention such as a character by character data entry and/or word/part-of-a-word by word/part-of-a-word data entry systems of the invention may use the above-mentioned keypads just described (e.g. having few numbers of keys such as 4 to six keys).

A personal mobile computer/telecommunication device

A mobile device must be small to provide easy portability. An ideal mobile device requiring data (e.g. text) entry and/or data communication must have small data entry unit (e.g. at most, only few keys) and a large (e.g. wide) display.

The arrangement of alphabetical letters (and other symbols) on few keys and the capability of quick and accurate complete data entry provided by the data entry systems of the invention through said few keys, may permit to reconsider the design of some of the current products for making them more efficient.

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One of those products is the mobile phone which is now used for the tasks such as text messaging and the internet, and is predicted to become a mobile computing device. The actual mobile phone is designed contrary to the principles described here-above. This is because the (complicated) data entry systems of the mobile phones require the use of many keys, using a substantial surface of the phone, providing slow data entry, and leaving a small area for a small (e.g. narrow) display unit.

One of the most commonly used applications of a computer is the word processing procedure. Along with the use of the Internet, writing letters will also become the most commonly used application of a mobile computer/communication device. Said application requires a wide display to permit drafting, formatting, and viewing the document preferably in its entire width. For example, while editing a letter, the user must see said document in its entire width, without being obliged to scroll it to the left or to the right.

According to one embodiment of the invention, an electronic device such as a mobile computing/communication device comprising a wide display and small data entry unit having quick data entry capability may be provided. Fig. 47a shows a mobile computing/communication device 4700 having two rows of keys 4701, 4702 wherein the alphabetical letters (e.g. preferably, having QWERTY arrangement as described before) are assigned to them. Other symbols such as numbers, punctuation marks, functions, etc. may also be assigned to said keys (or other keys), as described before. Said keys of said communication device may be combined with the press and speak data entry systems of the invention to provide a complete quick data entry. Use of few keys (e.g. in two rows only) for data entry, permits to integrate a wide display 4703 within said device. The width of said mobile device (and obviously, said display unit) may be approximately the width of an A4 paper to provide an almost real size (e.g. width) document for viewing. Said mobile computing/communication device may also have other buttons such as the buttons 4704, 4705 for functions such as scrolling the document to upward/downward, to left/right, navigating a cursor 4706 within said display 4703, send/end functions, etc. Also said device may comprise a mouse (e.g. a pointing device) within, for example, the backside or any other side of it. In several patent applications (such as "stylus Computer", and "Features to Enhance Data Entry") filed by this inventor mouse/browsing issues on a display and other data entry enhancement means have been described. All of said issues/features of said applications may be combined between them and/or combined with the data entry system and data communication devices of this invention.

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With continuous description of Fig. 47a, the arrangement of the keys in two rows 4701, 4702 on left and right side of said communication device 4700 permits the user to thumb-type with his two hands while holding said device 4700. It is understood that other configuration of letters and other symbols on other arrangement of keys on said device may be considered. For example, the device may comprise only few keys arranged in only one row wherein said symbols (e.g. letters) are assigned to them.

Also as mentioned before and described in corresponding patent application, by providing a mouse (not shown) in the backside of said device wherein the key(s) of said mouse being preferably, in the opposite side (e.g. front side) of said electronic device, the user may use for example, his forefinger, for operating said mouse while pressing a relating button with his thumb.

Also, as mentioned, said device may be used as a telephone. It may comprise at least one microphone 4707 and at least a speaker 4708. The distance between the location of said microphone and said speaker on said device may correspond to the distance between mouth and ear of a user.

Fig. 47b shows as an example, a device 4710 similar to that of the fig. 47, wherein its input unit comprises four keys only, arranged in two rows 4711, 4712 wherein the alphabetical letters and generally_numbers are assigned to said keys according to principles already described. Other symbols and functions (not shown) may also be assigned to said keys and/or other keys according to the principles already described. A user may use his two thumbs 4713, 4714 for typing.

Fig. 47c shows as an example, a device 4720 similar to that of the fig. 47b, wherein its input unit comprises four keys only arranged in two rows 4721, 4722 located on one side of said electronic device, wherein the alphabetical letters and generally_numbers are assigned to said keys according to principles already described. Other symbols and functions (not shown) may also be assigned to said keys and/or other keys according to the principles already described. A user may use one hand (or two hands) for data entry. A nub 4723 may be provided in the center of arrangement of said four keys to permit data entry without looking at the keypad.

Fig. 47d shows as an example, a device 4730 similar to that of the fig. 47c, wherein its input unit comprises four keys arranged in two rows 4731, 4732 located on one side of said electronic device, wherein the alphabetical letters and generally_numbers are assigned to said keys according to

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principles already described. A third row of keys 4733 duplicating one of said first two rows of keys (in this example, 4731), is positioned at the opposite end of said electronic device 4730. This arrangement of keys permits the user to enter data with one or two hands at his choice. Other symbols and functions (not shown) may also be assigned to said keys and/or other keys according to the principles already described.

Fig. 47e shows as an example, an electronic device 4740 designed according to the principles described in this application and similar to the preceding embodiments with the difference that here an extendable/retractable/foldable display 4741 may be provided within said electronic device to permit a large display while needed. For example, by using an organic light-emitting diode (OLED) display, said electronic device may be equipped with a one-piece extendable display. It is understood that said display may be extended as much as desired. For example, said display unit may be unfolded several times to provide a large display. It may also be a rolling/unrolling display unit so that to be extended as much as desired. It is understood that the keys of said data entry system of the invention may be soft keys being implemented within a surface of said display unit of said electronic device.

According to one embodiment of the invention, as shown in fig. 47f, an electronic device 4750 such as the one described before, may comprise a printing unit (not shown) integrated within it. Although said device may have any width, preferably, the design of said electronic device (e.g. in this example, having approximately the width of an A4 paper) may be such that a printing/scanning/copying unit using for example, an A4 paper may be integrated within said device. For example, a user may feed an A4 paper 4751 to print a page.

Providing a complete solution for a mobile computing/ communication device may be extremely useful in many situations. For example, a user may edit documents such as a letter and print them immediately. Also for example, a salesman may edit a document such as an invoice in client's promises and print it for immediate delivery.

To permit reducing the size of said mobile computing/communication device and still being capable of printing a standard size paper such as an A4 paper, a device corresponding to the size of half of said standard size paper may be provided.

Fig. 47g shows a standard blank document 4760 such as an A4 paper. As shown in Fig. 47h, said paper may be folded at its middle, providing two half faces 4761, 4762. As shown in Fig. 47i said folded document 4771 may be fed into the printing unit of an electronic device 4770

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such as the mobile computing/communication device of the invention to print a page of a document such as an edited letter, on its both half faces 4761, 4762 providing a standard sized printed letter. This will permit manufacturing of a small sized mobile electronic device being capable of printing a standard size document.

Circular Keyboard

According to one embodiment of the invention, at least part of the keys of a keypad may be positioned on said keypad in a manner to create a circular form. Fig 48 shows as an example, a keypad 4800 comprising six keys 4801-4806 positioned around a centered key 4807. Said centered key 4807 may be physically different than said other six keys. For example, said key 4807 may be bigger than the other keys, or it may be have a nub on it. Alphabetical letters having, for example, QWERTY configuration may be distributed among said keys. A space character may be assigned to the key 4807 situated in the center. Of course said keys may also comprise other symbols such as numbers, punctuation marks, functions, etc as described earlier in this application and the applications before and be used by the data entry systems of the invention. The advantage of this kind (e.g. circular) of key arrangement on a keypad is that, by recognizing said centered, key by touching it, a user may type on said keys without looking at the keypad.

A Wrist Communication Device

The data entry systems of the invention may permit to create small electronic devices with capability of complete, quick data entry. One of the promising future telecommunication devices is a wrist communication device. Many efforts have been provided to create a workable wrist communication/organizer device. The major problem of such device is workable relatively quick data entry system. Some manufacturers have provided prototypes of wrist phones using voice/speech recognition technology for data entry. Of course, hardware and software limitation of such devices provide poor data entry results. The data entry system of the invention combined with use of few keys as described in this application and the applications filed before by this inventor may resolve this problem and permit quick data entry on very small devices. Fig. 49 shows as an example, a wrist electronic device 4900 comprising few keys (e.g. in this example, four keys

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arranged in two rows 4901, 4902) wherein symbols such as alphabetical letters, numbers, punctuation marks, etc., are assigned to said keys according to the principles of the data entry systems of this invention. Said electronic device also comprises a data entry system of the invention using at least said keys. Said keys may be of any kind such as resembling to the regular keys of a mobile phone, or being touch-sensitive, etc. Touch sensitive keys may permit touch-typing with two fingers 4903, 4904 of one hand. A display unit 4905 may also be provided for viewing the data entered, the data received, etc. A watch unit 4906 may also be assembled with said wrist device. Said wrist device may also comprise other buttons such as 4907, 4908 for functions such as send/end, etc.. It must be noted that for faster data entry, a user my remove the wrist device from his wrist and use the thumbs of both fingers, each for pressing the keys of one row of keys. It is understood that other number of keys (e.g. 6 keys as described before) and other key arrangements (e.g. such as the circular key arrangement described before) may be considered.

It is also understood that other kinds of designs for a wrist communication/organizer device may be considered. For example, as shown in Fig. 49a, a flip cover portion 4911 may be provided with a wrist device 4910. Said device 4910 may for example, comprises most of the keys 4913 used for data entry, and said flip cover 4911 may comprise a display unit 4912 (or vise versa). As shown in Fig. 49b, on the other side of said flip cover, a display unit 4921of a watch unit may be installed. In closed position, said wrist device may resemble, and be used as, a wristwatch.

It is understood that the wrist devices shown and described here above are shown only as examples. Other types of wrist devices may be considered with the press and speak data entry system of the invention requiring the use of only few keys. For example, as shown in fig. 50a, a wrist communication device 5000 comprising the data entry system of the invention using few numbers of keys 5003, may be detachabely-attached-to/integrated-with the bracelet 5001 of a watch unit 5002. Fig. 50b shows a wrist device 5010 similar to the one 5000 of the fig. 50a with the difference that here the display unit 5011 and the data entry keys 5012 are separated and located on a flip cover 5013 and the device main body 5014, respectively (or vise versa). It is noted that said keys
and said watch unit may be located in opposite relationship around a user's wrist.

As mentioned, the data entry systems of the invention may be integrated within devices having few numbers of keys. A PDA is an electronic organizer that usually uses a handwriting recognition system or miniaturized virtual QWERTY keyboard wherein both methods have

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major shortcoming providing slow and frustrating data entry procedure. Usually most PDA devices contain at least four keys. The data entry system of the invention may use said keys according to principles described before, to provide a quick and accurate data entry for PDA devices. Other devices such as Tablet PCs may also use data entry system of the invention. Also, for example, according to another method , as mention, few large virtual (e.g. soft) keys (e.g. 4, 5, 6, 8, etc) such as those shown in fig.49a, may be designated on a display unit of an electronic device such as a PDA, Tablet PC, etc. and used with the data entry system of the invention. As an example, the arrangement and configuration of the keys on a large display such as the display unit of a Tablet PC may resemble to those shown in Figs. 47a-47d.

Movement-Tracking for Data Entry

Dividing a group of symbols such as alphabetical letters, numbers, punctuation marks, functions, etc., in few sub-groups and using them with the press and speak system of the invention may permit the elimination of use of button pressing action by, eventually, replacing it with other user's behavior recognition systems such as recognizing his movements. Said movements may be the movements of for example, fingers, eyes, face, etc., of a user. This may be greatly beneficial for user's having limited motor ability, or in environments requiring more discrete data entry system. For example, instead of using four keys, four movement directions of a user's body member such as one or more fingers, or his eye may be considered.

According to one embodiment of the invention, and by referring to fig. 45c and considering that symbols of a data entry system are arranged on four zones as an example, a user may move his eyes (or his face, in case of face tracking system, or his fingers in case of finger tracking system) to the upper right side and say "Y" for entering said letter. Same movement without speaking may be assigned to for example, the punctuation mark "." 4535. To enter the letter "s", the user may move his eyes towards lower left side and say "S". By using only few clearly/easily recognizing movements of a user assigned to few sub-group of symbols combined with a feature (of the data entry system of the invention) such as speaking a desired symbol, the data entry system of the invention will provide quick and accurate data entry without requiring hardware manipulations (e.g. buttons). As noticed, in this embodiment a predefined movement of

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user's body member may replace a key press in other embodiments. The rest of the procedures of the data entry systems of the invention may remain as they are.

It is understood that as described in previous applications instead of keys other objects such as a sensitive keypad or user's fingers may be used for assigning said subgroups of symbols to them. For example, for entering a desired symbol, a user may tap his finger (to which said symbol is assigned) on a desk and speak said letter assigned to said finger and said movement. Also instead of recognizing the voice (e.g. of speech) of the user other user's behavior and/or behavior recognition systems such as lip reading systems may be used.

One of the major problems for the at-least-part-of-a-word level (e.g. syllable-level) data entry of the invention is that if there is an outside noise and the speech of said part-of-the-word ends with a vowel, the system may misrecognize said speech and provide an output usually corresponding to the beginning of the desired portion but ending with a constant. for example, if a user says "mo" (while pressing the key corresponding to the letter "m"), the system may provide an output such as "mall". To eliminate this problem some methods may be applied with the data entry system of the invention.

According to one embodiment of the invention, as proposed previously, words/portion-of-a-words ending with a vowel pronunciation may be grouped with the words/portions having similar beginning pronunciation but ending with a consonant. After said words/portions are entered, the dictionary comparison and phrase structure will decided what was is the desired portion to be inputted. For example, word/portion-of-a-word "mo" and "mall" which are assigned to a same key may also be grouped in a same category, meaning that when a user presses said key and either says "mo" or "mall" in each of said cases the system considers the corresponding character-sets of both phoneme-sets. This is because there should be considered that the pronunciation of said two phoneme-sets "mo" and "mall" (specially, in noisy environments) are substantially similar and may be misrecognized by the voice recognition system.

According to one embodiment of the invention, a keypad wherein the alphabetical letters are arranged on for example, two columns of its keys may be used for at least the at-least-part-of-a-word level (e.g. syllable-level) data entry system of the invention.

Fig. 51 shows as an example, a keypad 5100 wherein the alphabetical letters are arranged on two columns of keys 5101 and 5102. Said arrangement locates letters/phonemes having closed pronunciation on different keys. Said arrangement also reminds a QWERTY arrangement with some

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modifications. In this example, the middle column does not contain letter characters. Different methods of at-least-part-of-a-word level (e.g. syllable-level) data entry system of the invention as described earlier may use said type of keypad or other keypads such as those shown in previous figs. having few keys, such the figs. 45a to 45d.

As described earlier, according to one embodiment of the invention, if a word/portion-of-a-word ends with a vowel, a user may press a key of said keypad corresponding to the beginning phoneme/letter of said word/portion-of-a-word and speak said word/part-of-a-word, for entering it. If necessary, for providing more information about said portion, a user may press additional keys corresponding to at least part of the letters constituting said portion. For example, if said word/part-of-a-word ends with a consonant phoneme, the user may press an additional key corresponding to said consonant.

To permit the system to distinguish between a key press corresponding to the beginning letter/phoneme of a word/portion-of-a-word and a key press corresponding to for example, the last letter/phoneme of said word/portion-of-a-word, different methods such as the ones described hereafter, may be provided.

According to one embodiment of the invention, when a user presses a first key corresponding to the beginning phoneme/letter of a word/portion-of-a-word while speaking it, he may keep said key pressed, and press at least an additional key corresponding to another letter (preferably the last consonant) of said word/portion-of-a-word.

If said another letter is located on a same beginning key, the user may double-press said key while speaking said word/part-of-a-word.

Fig. 51a shows a keypad 5110 wherein alphabetical characters (shown in uppercase) are arranged on two columns of its keys 5111, 5112. Each of said keys containing said alphabetical characters also contains the alphabetical characters (shown in lowercase) as assigned to the opposite key of the same row. According to one embodiment of the invention, When a user attempts to enter a word/part-of-a-word, he presses the key corresponding to the beginning character/phoneme of said word/part-of-a-word printed in uppercase (e.g. printed in uppercase on said key) and speaks said word/part-of-a-word. If said user desires to provide more information such as pressing a key corresponding to an additional letter of said word/part-of-a-word, (while keeping said first key pressed) said user may press a key situated on the opposite column corresponding to said additional letter (e.g. printed in uppercase or lowercase on a key of

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said opposite column) of said word/part-of-a-word. For example, if a user desires to enter the word "fund", he first presses the key 5113 and says said word, and (while keeping said key 5113, pressed) said user presses consecutively, for example, two additional keys 5114 and 5115 corresponding to the consonants "n", and "d".

Fig. 51b shows a keypad 5120 similar to the keypad of the fig. 51a with the difference that, here two columns 5121 and 5122 are assigned to the letters/phonemes corresponding to a beginning phoneme/letter of a word/part-of-a-word, and an additional column 5123 is used to provide more information about said word/part-of-a-word by pressing at least a key corresponding to at least a letter other than the beginning letter of said word/part-of-a-word. This may permit a data entry using one hand only. For example, if a user desires to enter the word "fund", he first presses the key 5124 and says said word, and (after releasing said key 5124) said user presses consecutively, for example, two additional keys 5125 and 5126 corresponding to the consonants "n", and "d".

According to another embodiment of the invention, as mentioned above, symbols requiring a speech (for entering them), may be assigned to a first predefined number of objects/keys, and symbols to be entered without a speech, may be assigned to another predefined number of keys, separately from said first predefined number of keys.

According to another embodiment of the invention, if the keys providing letters comprise only spoken symbols, then the user may press a key corresponding to a first letter/phoneme of said word/part-of-a-word and, preferably simultaneously, speaks said word/part-of-a-word. He then may press additional key(s) corresponding to additional letter(s) constituting said word/part-of-a-word without speaking. The system recognizes that the key press(es) without speech corresponds to the additional information regarding the additional letter(s) of said word/part-of-a-word. For example, by referring to the fig. 51 and considering that to the keys providing letters, of said keypad, only spoken symbols are assigned, if a user desires to enter the word "fund", he first presses the key corresponding to the letter "f" while saying "fund", and after releasing said key said user presses consecutively, for example, two additional keys corresponding to the letters "n", and "d" without speaking.

As mentioned before, the word/portion-of-a-word data entry system of the invention may also function without the step of comparing the assembled selected character-sets with a dictionary of words/portions-of-words. A user may enter a word, portion by potion, and have them inputted

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directly. As mentioned, this is useful for entering a-word/part-of-a word in different languages without worrying about its existence in a dictionary of words/portions-of-words. A means such as a mode key may be used to inform the system that the assembled group of characters will be inputted/outputted without said comparison. If more than one assembled group of characters has been produced they may be presented to the user (e.g. in a list printed at the display) and the user may select one of them by, for example, pressing a "select" key. In another embodiment, if more than one assembled group of characters has been produced, an assembled group of character having the highest priority may be inputted automatically by proceeding to, for example, the entry of a next word/portion-of-a word, a punctuation mark, a function such as "enter", etc.

Also, According to said principles described earlier in this application, a word may be inputted by entering it portion-by-portion with/without the step of comparison with a dictionary of words. Also as described before, said portion may be a character or a group of characters of a word (a macro).

According to one embodiment of the invention, in addition to the alphabetical letters, the character by character data entry system of the invention may use a limited number of frequently used portion-of-a-words (e.g. tion", "ing", "sion", "ment", "ship", "ed", etc.) and/or limited number of frequently used words (e.g. "the", "and", "will", etc.,) to provide a quick and accurate data entry system requiring small amount of memory and faster processing. Said limited number of words/portion-of-a-words may be assigned to the corresponding (interaction with the) keys of a keypad according to the principles of the data entry system of the invention as described in this application and the applications filed before. Also, obviously, the may inputted according to the principles of the data entry system of the invention as described in this application and the applications filed before. According to this embodiment, for example, a user may enter the word "portion", in four portions "p", "o", "r", and "tion". To do so, for example by using the keypad of the figure 45c, said user may first say "p" and press (preferably, almost simultaneously) the corresponding key 4533. He, then, may say "o" and press (preferably, almost simultaneously) the corresponding key 4533. Then, said user may say "r" and press (preferably, almost simultaneously) the corresponding key 4530. And finally, he may say "shen" (e.g. pronunciation of the portion-of-a-word, "tion") and press (preferably, almost simultaneously) the key 4530 (e.g. corresponding to the letter "t", the first letter of the portion-of-a-word, "tion") to which the portion "tion" is assigned.

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As mentioned before, this embodiment of the invention may be processed with/without the use of the step of comparison of the inputted word with the words of a dictionary of words as described before in the applications. In case of not using said comparison step, the data may be inputted/outputted portion by portion.

As mentioned, this embodiment of the invention is beneficial for the integration of the data entry system of the invention within small devices (e.g. wrist-mounted electronic devices, cellular phones) wherein the memory size and the processor speed are limited. In addition to (or in replacement of) said list of frequently used words/portion-of-a-words, a user may also add his preferred words/portion-of-a-words to said list.

As previously described, the data entry system of the invention may use few numbers of keys for a complete data entry. It is understood that instead of said few keys, a single multi-modal/multi-section button having different predefined sections wherein each section responding differently to a user's action/contact on said each of said different predefined sections of said multi-mode/multi-section button, may be provided wherein characters/phoneme-sets/character-sets as described in this invention may be assigned to said action/contact with said predefined sections. Fig. 52 shows, as an example, a multi-mode/multi-section button 5200 (e.g. resembling to a multi/mode button used in many electronic games, cellular phones, remote controllers of TVs, etc.) wherein five sections 5201-5205 of said button, each respond differently to user's finger action (e.g. pressing) /contact on said section. As an example, different alphanumeric characters and punctuations may be assigned to four 5201-5204 of said sections and the space character may be assigned to the middle section 5205. It is understood that said button 5200 may have a different shape such as an oval shape, and may have different number of sections wherein different configuration of symbols may be assigned to each of said portions.

As described before and shown as example in figs. 47a to 47i, an electronic device such as a mobile computing/communication device comprising a wide display and small data entry unit having quick data entry capabilities due to data entry system of the invention, may be provided. Also as mentioned previously, said electronic device may comprise additional buttons. Fig. 53, shows an electronic device 5300 comprising keys 5302, 5303 (in this example, bi-directional keys) for entering text and corresponding functions, and additional rows of buttons 5304, 5305 for entering other functions such as dialing phone numbers (e.g. without speaking said numbers), navigating within the display, sending/receiving a call, etc. A group of symbol for

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at least text entry, as described in this invention, may be assigned to pressing each side of a bi-directional key such as the keys 5302-5303. A bi-directional key may correspond to two separate keys. Manipulating a bi-directional key may be easier than manipulating two separate keys. In the example of this embodiment, a user may enter the data by using the thumbs 5306, 5307 of his two hands.

As mentioned in different paragraphs of this patent application and the previous ones filed by this inventor, it is understood that other kinds of keys such as virtual (soft) keys may be used with the data entry system of the invention. Also, at least part of the additional data entry features described in this patent application and the previous ones applied by this inventor may be integrated within the computer/telecommunication device of the invention. For example, an extendable (e.g. detachable) microphone/camera/ antenna 5301, and a mouse (not shown) within the backside of said device (e.g. to be manipulated by the user's forefinger) wherein its corresponding keys being on the front side or on any other side of said computer/telecommunication device, as described earlier, may be implemented.

As mentioned before, part/all of the symbols available for a complete data entry may be assigned to few keys and be used with the data entry system of the invention to provide a complete quick and easy data entry. Said few keys may be part of the keys of a keypad. Fig. 54 shows another example of the assignments of the symbols of a PC keyboard to few keys 5400. In this example, the arrows for navigation of a cursor (e.g. in a text) on a display, may be assigned to a spoken mode. For example, a user may single-press the key 5401 and say "left" to move the cursor (e.g. in a text printed on the display) one character left. To move the cursor several characters left, said user may press the key 5401 while saying "left" and keep said key pressed. The cursor may keep moving left until the user releases said key 5401. To move said cursor to the right, the user may press the key 5402 while saying, for example "right", and using the procedure which just described. Similar procedures may be used for moving the cursors up and down in a text by pressing the corresponding keys and saying corresponding words.

According to one embodiment of the invention, moving the cursor in several directions (such as left, right, up, and down) may be assigned to at least one key. With continuous reference to Fig. 54, as an example, moving the cursor in different directions may be assigned to a single key 5403. For example, a user may press the key 5403 and say "left" to move said cursor to the

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left. To move the cursor to the right, up, or down, said user may press the key 5403 and say "right", "up", or "down", respectively.

It is understood that in this example, the number of keys (to which part/all symbols available for a complete data entry may be assigned) are demonstrated only as an example. Said number of keys may be different according to the needs such as the design of an electronic device.

According to one embodiment of the invention, a keypad/data-entry-unit of the invention having a few keys may comprise additional features such as a microphone, a speaker, a camera, etc. Said keypad may be a standalone unit being connected to a corresponding electronic device. Said standalone keypad may permit to integrate a display unit covering substantially a whole side of said electronic device. Fig. 55a shows a standalone keypad 5500 of the invention having at least few keys (or at least a multi-directional key corresponding to said few keys) 5501, 5507,5508,5509 to which part/all of the symbols available for a complete data entry may be assigned for data (e.g. text) entry. Said keypad may also comprise additional features such as a microphone 5502, a speaker 5505, a camera 5503, etc. Said additional features may be integrated within said keypad, or being attached/connected to it, etc. As shown in Fig. 55b, said keypad 5500 (shown by its side view) may also comprise attaching means 5504 to attach said keypad to another object such as a user's finger/wrist. Said keypad may be connected (wirelessly or by wires) to a corresponding electronic device. Fig. 55c, shows a standalone keypad 5510 according to the principles just described. As mentioned before, by using few keys combined with the data entry system of the invention for a complete data entry, after a short period of exercise, a user may enter complete data such as text through said few keys without looking at said keys. Based on this principle, a user may hold said keypad 5510 in (e.g. the palm of) his hand 5511, position it closed to his mouth (by bringing his hand closed to his mouth), and press the desired keys while not-speaking/speaking-the-symbols (e.g. characters, letters, words/part-of-words, functions corresponding to said key presses) according to the principles of the data entry system of the invention, without looking at the keys. As mentioned, said keypad may be, wirelessly or by wires, connected to a corresponding electronic device. In this example, the keypad is connected by a wire 5512 to a corresponding device (not shown). Also in this example, a microphone 5513 is attached to said wire 5512. Holding said keypad 5510 in (e.g. the palm) of a hand closed to the mouth for data entry has many advantages such as:

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- a user does not have to wear a head-worn microphone
- said user may speak very closed to the microphone, therefore he may speak discretely
- the cavity of the user's palm may accentuate the user's voice for better reception by the microphone
- the (e.g. palm of) the hand of the user substantially eliminates the outside noise while speaking
- the (e.g. palm of) the hand of the user prevents the user's voice to be spread (e.g. not disturbing the others).

It is understood that the standalone keypad/data-entry-unit of the invention may also comprise part/all of the features described in this application and the previous applications filed by this inventor. For example, said standalone keypad/data-entry-unit may comprise a camera to, for example, be used with the lip-reading system of the invention. It also may comprise a means based on the denture recognition system of the invention. Said keypad may also comprise other features such as a battery, wireless means to connect said keypad to a corresponding device. An antenna may also be implemented with said keypad. In case of wired connection, said wire may also comprise an antenna system of the keypad and/or the corresponding electronic device.

According to one embodiment of the invention, as shown in Fig. 55d, the standalone keypad 5520 of the invention may be used as a necklace/pendent. This permits easy and discrete, portability and use, of the keypad/data-entry-unit of the invention.

According to one embodiment of the invention, as shown in Fig. 55e, the standalone keypad 5530 of the invention may be attached-to/integrated-with a pen of a touch sensitive display such as the display of a PDA/TabletPC. This permits easy and discrete, portability and use, of the keypad/data-entry-unit of the invention.

According to one embodiment of the invention, as shown in Fig. 55f, the keypad of the invention having few keys may be a multi-sectioned keypad 5540 (shown in closed position). This will permit to still more reduce the size of said keypad permitting to provide an extremely small sized keypad through which a complete data entry may be provided. A multi-sectioned keypad has already been invented by this inventor and patent applications have been filed. Some/all of the descriptions and features described in said applications may be applied to the multi-sectioned keypad of the invention having few number of keys.

According to one embodiment of the invention, as shown in Fig. 55g, the keypad/data-entry-unit of the invention having few number of keys 5550, may comprise a pointing unit (e.g. a mouse) within the backside (or other sides) of said keypad. Said pointing unit may be of any

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type such as a pad-type 5551 or a balled-type (not shown). The keys of said pointing unit may be unit may be located on the front side of said data entry unit. A point-and-click (e.g. mouse) unit located in a side such as the backside of a data-entry-unit has already been invented by this inventor and patent applications have been filed accordingly. Some/all of the descriptions and features described in said applications may be applied to the multi-sectioned keypad of the invention having few keys. For example, at least one of the keys of said keypad may function also as the key(s) of said pointing unit which is located at the backside of said keypad.

Fig 55h shows data entry device 5560 of the invention having a data entry unit 5561 comprising few keys 5565-5568. Said device also has a point-and-click (e.g. mouse) unit to work in combination with said data entry unit for a complete data entry and manipulation of data. Said device and its movements on a surface may resemble to a traditional computer mouse device. Said integrated device may be connected wirelessly or be wires 5562 to a corresponding electronic instrument such as a computer. As shown in fig. 55i, a pointing (e.g. mouse) unit 5569 may be located in a side such as the backside of said data-entry-unit 5561 (not shown here, located on the other side of said device) of said. Said pointing (e.g. mouse) unit 5569 may be a track-ball-type mouse. A user may manipulate/work-with a computer using said integrated data entry device 5560 combined with the data entry system of the invention, replacing the traditional PC keyboard and mouse. Keys of the mouse may be the traditional keys such as 5563, 6664 (see fig. 55h), or their functions may be assigned to said few keys (5565-5568, in this example) of said data entry unit 5561.

According to one embodiment of the invention, as mentioned in this patent application and the previous patent applications filed by this inventor, the data entry system of the invention may be combined with a word predictive software. For example, a user may enter at least one beginning character of a word by using the data entry system of the invention (e.g. speaking a part-of-a-word corresponding to at least one character) while pressing corresponding key(s), and continue to press the keys corresponding to the rest of said word without speaking them. The precise entry of the beginning letters of said word (due to accurate data entry system of the invention) along with the pressing of the keys (without speaking) corresponding to the remaining letters of said word may permit an accurate data entry system also permitting less speech. It is understood that in this embodiment, symbols other than letters, may preferably be assigned to separate keys or to separate interactions with the same keys.

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According to one embodiment of the invention, the keypad/data entry unit of the invention having few keys, may be attached/integrated with a traditional earbud of an electronic device such as a cell phone. Fig. 55j shows a traditional earbud 5570 used by a user. The earbud may comprise a speaker 5571, a microphone 5572 and a keypad/data entry unit of the invention 5573 (multi-sectioned keypad, in this example). it is understood that the keypad/data entry unit of the invention may be used with a corresponding electronic device for entering key presses while a separate head microphone is used for entering a user's corresponding speech.

Sweeping procedures Combined with the Data Entry System of the Invention

As mentioned before, the data entry system of the invention may use any kind of objects such as few keys, one or more multi-mode (e.g. multi-directional) keys, one or more sensitive pads, user's fingers, etc. Also as mentioned, said objects such as said keys may be of any kind such as traditional mobile-phone-type keys, touch-sensitive keys, keys responding to two or more levels of pressure on them (e.g. touch level and more pressure level), soft keys, virtual keys combined with optical recognition, etc.

As mentioned before, when entering a portion of a word according to the data entry systems of the invention, for better recognition, in addition to providing information (e.g. key press and speech) corresponding to a first character/phoneme of said portion, a user may provide additional information corresponding to more characters such as the last character(s), and/or middle character(s) of said portion.

According to one embodiment of the invention, as shown in Fig. 56, a touch sensitive surface/pad 5600 having few predefined zones/keys such as the zones/keys 5601-5604 may be provided and work with the data entry system of the invention. To each of said zones/keys a group of symbols according to the data entry systems of the invention may be assigned. The purpose of this embodiment is to enhance the word/portion-of-a-word (e.g. including the character-by-character) data/text entry system of the invention. According to this embodiment, to provide a single character data entry, a user may for example, single/double press a corresponding zone/key combined-with/without speech (according to the data entry systems of the invention, as described before). To enter a word/portion-of-a-word having at least two characters, while speaking said word/portion-of-a-word, the user may sweep, for example, his

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finger or a pen, over at least one of the zones/keys of said surface, relating to at least one of the letters of said word/portion-of-a-word. The sweeping procedure may, preferably, start from the zone corresponding to the first character of said word/portion-of-a-word, and also preferably, end at a zone corresponding to the last character of said word/portion-of-a-word, while eventually, (e.g. for helping easier recognition) passing over the zones corresponding to one or more middle character of said word/portion-of-a-word. The entry of information corresponding to said word/portion-of-a-word may end when said user removes (e.g. lifts) said finger (or said object) from said surface/sensitive pad. It is understood that the speech of the user may end before said corresponding sweeping action ends, but the system may consider said whole corresponding sweeping action.

According to another embodiment of the invention, for entering a word/part-of-a-word, while speaking it, a user may sweep his finger over the zones/keys (if more then one consecutive characters are represented by a same zone/key, accordingly, sweeping in several different directions on said same zone/key) corresponding to all of the letters of a said word/part-of-the-word to be entered. With reference to the fig. 56a, for example, to enter the word/portion-of-a-word "for", while saying it, a user may sweep his, for example finger or a pen, over the zones/keys 5612, 5614, and 5611, corresponding to the letters "f", "o", and "r", respectively (demonstrated by the multi-directional arrow 5615). The user, then, may lift his finger from said surface (e.g. sensitive pad) informing the system of ending the entry of the information corresponding to said word/portion-of-a-word.

According to another embodiment of the invention, for quicker interaction, to enter a word a user may sweep his finger over the zones corresponding to some of the letters of said word/part-of-a-word to be entered. With reference to the fig. 56b, for example, to enter the word/portion-of-a-word, "for", while saying it a user may sweep his, for example finger or a pen, over the zones 5622, 5621 (demonstrated by the arrow 5625) starting from the zone 5622 (e.g. corresponding to the letter "f") and ending at the zone 5621 (e.g. corresponding to the letter "r") without passing over the zone 5624 corresponding to the letter "o".

The advantage of a sweeping procedure on a sensitive pad over pressing/releasing action of conventional non-sensitive keys (e.g. keys of a conventional telephone keypad) is that when using the sweeping procedure, a user may lifts his finger from said sensitive surface only after finishing sweeping over the zones/keys corresponding to several (or all) of the letters of a word-

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part-of-a-word. Even if the user ends the speech of said portion before the end of the corresponding sweeping action, the system considers the entire corresponding sweeping action (e.g. from the time the user first touches a first zone/key of said surface till the time the user lifts his finger from said surface). Touching/sweeping and lifting the finger from said surface may also inform the system of the start point and endpoint of a corresponding speech (e.g. said speech is preferably approximately within said time limits.

In conclusion, according to one embodiment of the invention, a trajectory of a sweeping interaction (e.g. corresponding to the words having at least two characters) with a surface having a predefined number of zones/keys responding to said interaction may comprise the following points (e.g. trajectory points) wherein each of said points correspond to a letter of said word/part-of-a-word:

1) Starting point, corresponding to the first character of a word/part-of-a-word
2) Sweeping direction changing points (e.g. not obligatory, does not exist for the words having two characters only), usually corresponding to a middle character (if there exist any) of said word/part-of-a-word
3) Ending point corresponding to an additional character (preferably, the last (preferably, pronounceable)) of said word/part-of-a-word p271

Fig. 57 shows as an example, a trajectory 5705 of a sweeping action corresponding to the word "bring", on a surface 5700 having four zones/keys 5701-5704. The starting point 5706 informs the system that the first letter of said word is located on the zone/key 5703. The other three points/angles 5707-5709 corresponding to the change of direction and the end in the sweeping action, inform the system that said word comprises at least three more letters represented by the one of the characters assigned to the zones 5701, 5704, and 5702. Preferably, the order of said letters in said word (e.g. "bring, in this example) corresponds to the order of said trajectory points. It is understood that said angles corresponding to the change of direction may be less accentuated and have formed such as a curved form. Fig. 57a shows as an example, a sweeping trajectory (shown by the arrow 5714 having a curved angle 5715) corresponding to the word "time". In this example, the sweeping action has been provided according to the letters "t" (e.g. presented by the key/zone 5711), "i", (e.g. presented by the key/zone 5712), and "m" (e.g. presented by the key/zone 5713). It is understood that the user speaks said word (e.g. "time", in this example) while sweeping.

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The tapping/pressing and/or sweeping data entry system of the invention will significantly reduce the ambiguity between a letter and the words starting with said letter and having a similar pronunciation. Based on the principles just described, for example, to enter the letter, "b", and the words/part-of-a-words, "be" and "bee", the following procedures may be considered:

- to enter the letter "b", as shown in fig. 58a, a user, as usual, may single press/touch (without sweeping) a sensitive-zone/key (e.g. the zone/key 5801 in this example) corresponding to the letter "b" while pronouncing said letter.
- to enter the word/part-of-a-word, "be", as shown in fig. 58b and described earlier, while pronouncing said word/part-of-a-word, a user may sweep on the sensitive surface 5810 starting from the zone 5811 corresponding to the letter "b" and passing/ending at the zone 5812, corresponding to the letter "e". The arrow 5813 demonstrates the corresponding sweeping path/trajectory.
- to enter the word/part-of-a-word "bee", as shown in fig. 58c and described earlier, while pronouncing said word/part-of-a-word, a user may sweep on the sensitive surface 5820 starting from the zone 5821 corresponding to the letter "b", passing/sweeping on the zone 5822, corresponding to the (e.g. first) letter "e", and changing sweeping direction on the same zone 5822, corresponding to the (e.g. second) letter "e". Having two trajectory points (e.g. middle and end point in this example) on a same zone/key may inform the system that at least two letters of said word/part-of-a-word are located-on/assigned-to said zone/key and are located after the letter corresponding to the previous zone/key in said word/part-of-a-word. The arrow 5823 demonstrates the corresponding sweeping path.

It must be noted that, as shown, each change in sweeping direction may correspond to an additional corresponding letter in a word. While sweeping from one zone to another, there user may pass over a zone that he is not intending to. The system may not consider said passage if, for example, either the sweeping trajectory over said zone is not significant (e.g. see the sweeping path 5824 in the zone/key 5825 of the fig. 58c), and/or there has been no angles (e.g. no change of direction) in said zone, etc. Also to reduce and/or eliminate the confusability, a traversing (e.g. neutral) zone such as the zone 5826 may be considered.

As mentioned before, the character by character data entry system of the invention and the word/portion-of-a-word by word/portion-of-a-word data entry system of the invention may be combined. Also, sweeping and pressing embodiments of the invention may be combined. For example, to write a word such as "stop", a user may enter it in two portions "s" and "top". To enter the letter "s", the user may (single) touch/press, the zone/key corresponding to the letter "s" while pronouncing said letter. Then, to enter the portion "top", while pronouncing said portion,

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the user may sweep (e.g. drag), for example, his finger over the corresponding zones/keys according to principles of the sweeping procedure of the invention as described.

To reduce or eliminate the ambiguity of an accidental contact with a zone/key of a sensitive surface, in addition to touch sensitive feature another feature such as a click/heavier-pressure system (such as the system provided with the keys of a conventional mobile phone keypad) may be provided with each zone/key. In this case, for example, to enter a single symbol (e.g. according to the character by character data entry system of the invention) rather than a slight touching, the user may more strongly press a corresponding zone/key to enter said symbol. To proceed to the word/part-of-a-word by word/part-of-a-word data entry system of the invention, the user may use the sweeping procedures as described earlier, by sweeping, for example, his finger, slightly (e.g. using slight pressure) over the corresponding zones/keys.

If a word/part-of-a-word contains letters represented on a single zone/key, while speaking said word/part-of-a-word, a user may sweep, for example, his finger over said zone/key, in several consecutive different directions (e.g. at least one direction, and at most the number of directions equivalent to the number of letters (n) constituting said word/part-of-a-word, minus one (e.g., n-1 directions)). For example, to enter the word, "you", as shown in fig. 59a, in addition to speaking said word, a user may sweep his finger once (e.g. preferably, in a single straight/almost straight direction 5902) on the zone/key 5901 to inform the system that at least two letters of said word/part-of-a-word are assigned to said zone/key (according to one embodiment of the invention, entering a single character is represented by a tap over said zone/key). To enter the same word by providing more information to the system, as shown in fig. 59b, said user may sweep, for example, his finger, in two consecutive different directions 5912, 5913 (e.g. two straight/almost straight direction) on the zone/key 5911 corresponding to at least three letters (e.g. in this example, all of the letters constituting the word "you") of said a word/part-of-a-word, without removing (e.g. lifting) his finger from said zone/key (e.g. in this example, providing three trajectory points, 1 begin, 1 middle, 1 end).

As mentioned, to enter a word/part-of-a-word, a user may speak said word/part-of-a-word and sweep an object such as his finger over at least part of the zones/keys representing the corresponding symbols (e.g. letters) of word/part-of-a-word. According to one embodiment of the invention, preferably, the user may sweep over the zone(s)/key(s) representing the first letter, at least one of the middle letters (e.g. if exist any), and the last letter of said word/part-of-a-word.

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Preferably, the last letter considered to be swap may be the last letter corresponding to the last pronounceable phoneme in a word/part-of-a-word. For example, the last letter to be swap of the word, "write", may be considered as the letter "t" (e.g. pronounceable) rather than the letter "e" (e.g. in this example, the letter "e" is not pronounced). It is understood that if desired, the user may sweep according to both letters "t" and "e".

According to another example, a user may sweep according to the first letter of a word/part-of-a-word and at least one of the remaining consonants of said word/part-of-a-word. For example, to enter the word "force", the user may sweep according to the letters "f", "r', and "c".

To enter a word in at least two portions, according to one embodiment of the invention, the user first sweeps (for example, by using his finger) on the zones/keys according to the first portion while speaking said portion. He then, may lift (e.g. remove) his finger from the sensitive surface to inform the system that the entry of said (e.g. in this example, first) potion has ended. The user then proceeds to entering the next portion (and so on) according to the same principles. At the end of the word, the user may provide an action such as pressing/touching a space key.

To enter a word in at least two portions, according to another embodiment of the invention, the user first sweeps (for example, by using his finger) on the zones/keys according to the first portion while speaking it. He then, (without lifting/removing his finger from the sensitive surface) proceeds to entering the next portion (and so on) according to the same principles. At the end of the word, the user may lift (e.g. remove) his finger from the sensitive surface to inform the system that the entry of said whole word has ended. The user, then, may provide an action such as pressing/touching a space key. In this embodiment, as described, lifting the finger from the writing surface may correspond to the end of the entry of an entire word. Accordingly, a space character may automatically be provided before/after said word.

It is understood that, preferably, the order of sweeping zones/keys and, if necessary, different directions within said zones/keys may correspond to the order of the location of the corresponding letters in the corresponding word/part-of-a-word (e.g. from left to right, from right to left, from up to down, etc.). For example, while entering a word/portion-of-a-word in English language, a user may sweep on the zones/keys corresponding and/or according to the letters situated from left to right in said word/portion-of-a-word. In another example, while entering a word/portion-of-a-word in for example, Arabic or Hebrew language, a user may sweep on the

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zones/keys corresponding and/or according to the letters situated from right to left in said word/portion-of-a-word. As mentioned and demonstrated before, it is understood that a user may sweep zones (and direction) either according/corresponding to all of the letters of said word/portion-of-a-word or according/corresponding to some of the letters of said word/portion-of-a-word.

As mentioned before, part or all of the systems, methods, features, etc. described in this patent application and the patent application filed before by this inventor may be combined to provide different embodiments/products. For example, after entering a word portion by portion (e.g. by using the sweeping data entry of the invention), as described previously, to each entry of a portion, more than one related chain of letters may be selected by the system. In this case, as previously described, different assembly of said selections may be provided and compared to the words of a dictionary of words. If said assemblies correspond to more than one word of said dictionary then they may be presented to the user according to their frequency of use starting from the most frequent word to the least frequent word. This matter have been described in detail, previously.

The automatic spacing procedures of the invention may also be applied to the data entry systems using the sweeping methods of the invention.

As described before, different automatic spacing procedures may be considered and combined with the data entry systems of the invention. According to one embodiment of the invention (as described before) each word/portion-of-a-word may have special spacing characteristics such as the ones described hereunder:

- a portion-of-a-word may be of a kind to, preferably as default, be attached to the previous word/potion-of-a-word (Examples, "ing", "ment", "tion", etc).
- a portion-of-a-word may be of a kind, to preferably, be attached to the previous word/potion-of-a-word and may also require the next word/portion-of-a-word to be attached to it (e.g. "ma" in the word "information")
- a portion-of-a-word may be an independently meaningful word that may not be attached to the previous word/potion-of-a-word As default, a space character before or after said word may automatically be provided, unless , for example, the user or the phrase context require it to be attached to said previous/next word/potion-of-a-word (e.g. "for", "less").
- single characters such as the letters, digits, punctuation marks, may be considered to be (e.g. as default) automatically attached to the previous/next word/potion-of-a-word, unless otherwise decided.

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According to one embodiment of the invention, based on the character-by-character data entry systems of the invention, the entry of a single character such as a letter may be assigned to pressing/tapping a corresponding zone/key of a the touch-sensitive surface combined with/without speech, and a word/portion-of-a-word entry may be assigned to speaking said word/portion-of-a-word while providing a single-direction sweeping action (e.g. almost straight direction) on a zone/key to which the beginning character of said word is assigned. For example, to enter the letter "z", while pronouncing said letter, a user may press/touch (without sweeping) a key to which said letter "z" is assigned. To enter the word/portion-of-a-word "zoo", while pronouncing said word/portion-of-a-word, a user may sweep a zone/key to which said letter "z" (e.g. corresponding to the beginning letter of the word "zoo") is assigned. This may permit to the system to easily understand the user's intention of, either a character entry procedure or a word/portion-of-a-word entry procedure.

As described and/or shown, the data entry systems of the invention may provide many embodiments based on the principles described in patent applications filed by this inventor. Based on said principles and according to different embodiments of the invention, for examples, different keypads having different number of keys, and/or different key maps (e.g. different arrangement of symbols on a keypad) may be considered. An electronic device may comprise more than one of said embodiments which may require some of said different keypads and/or different key maps. To permit providing said keypads and/or key maps within a same electronic device, physical and/or virtual keypads and/or key maps may be provided.

According to one embodiment of the invention, different keypads and/or key maps according to a current embodiment of the invention on an electronic device, may automatically, be provided on the display unit of said electronic device. A user, according to, for example, the needs or his preference may select an embodiment from a group of different embodiment existing within said electronic device. For this, a means such as a mode (e.g.) may be provided within said electronic device which may be used by said user for selecting one of said embodiments and accordingly a corresponding keypads and/or key-map.

According to another embodiment, for example, instead of using the display unit of an electronic device for printing a keypad and/or a key-map, the keys of a keypad of said device (for example, if said electronic device is a telephone, the keys of its keypad) may be used to display

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different key maps on at lest some of the keys of said keypad. For this purpose, said keys of said keypad may comprise electronically modifiable printing keycaps (e.g. key surface).

Still, according to another embodiment and by referring to the previous embodiment, instead of using a keypad having electronically modifiable printing keycaps, different hard key maps according to corresponding data entry embodiments may be provided and delivered with said electronic device. Fig. 60, shows as an example, an exchangeable (e.g. front) cover 6000 of a mobile phone, having a number of hollow holes (e.g. such as the hole 6001) corresponding to a physical keycap (usually made in rubber material by the manufacturers of the mobile phones) . With said mobile phone and the exchangeable cover, also different replaceable hard (e.g. physical) key maps (e.g. such as the key maps 6011-6013) corresponding to the relating embodiments of the invention, may be provided. After selecting a desired embodiment of the date entry system, a user may, manually, replace a corresponding key map within said cover (and said phone).

It is understood that instead of a single pad having different predefined zones, different predefined pads, touch and/or press-sensitive-keys, etc., corresponding to each of said zones may be provided. Also fingers of a user may be used to assign said groups of symbols and said sweeping movements to said fingers combined with touch sensitive surface(s) or any other finger recognition systems (such as an optical scanning) as described in this application and the applications filed before. It must be noted that for example, any kind of technology and interaction such as two levels of pressure may be used instead of the sweeping data entry method of the invention, to provide the same results. Also any kind and number of objects such as keys may be used. These matters have already been described in this patent application, and previous patent applications filed by this inventor.

According to one embodiment of the invention, instead of few keys and the manners of manipulation of said keys, the symbols and configuration of them (e.g. as described in different applications) may be assigned to other objects such as few fingers of a user and the user's manipulations of said fingers. Said fingers of said user may replace the keys of a keypad and said movements of said fingers may replace different modes such as single and/or double press, sweeping procedure, etc. Said fingers and said manipulations of said finger may be used with the user's behaviors such as voice and/or lip movements. Different recognition system for recognizing said objects (e.g. fingers, portions of fingers, fingerprint recognition systems,

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scanning systems, optical systems, etc.) and different recognition system for recognizing said behaviors (e.g. voice and/or lip recognition systems) may be used to provide the different embodiments of the invention as described before and may be described later.

According to one embodiment of the invention and by referring to the embodiment of the system using four keys for data entry, instead of four keys, four finger of a user may be used to assign the symbols which were assigned to said keys. Also, for example, a means such as an optically recognition system and/or a sensitive surface may be used for recognizing the interactions/movements of said fingers. For example, to enter the letter "to", a user may tap (e.g. single tap) one of his fingers to which the letter "t" is assigned on a surface while pronouncing said letter. Still based on the data entry systems of the invention, an additional recognition means such as a voice recognition system may be used for recognizing the user's speech and helping the system to provide an accurate output.

Use of Multi-directional button or trackball, for word/part-of-a-word data entry

Instead of using a touch sensitive surface/pad having few predefined zones/keys combined with the sweeping procedure of the invention for entering words/part-of-a-words, other means such as a trackball, or a multi-directional button having few (e.g. four) predefined pressing zones/keys may be provided with the data entry system of the invention. The principles of such systems may be similar to the one described for said sweeping procedure, and other data entry systems of the invention.

According to one embodiment of the invention, a trackball having rotating movements which may be oriented toward a group of predefined points/zones around said trackball, and wherein to each of said predefined points/zones, a group of symbols according to the data entry systems of the invention may be assigned, may be used with the data entry system of the invention. As mentioned, the principles of said system may be similar to those described for the sweeping procedure using a touch sensitive surface/pad having few predefined zones/keys. The difference between the two systems is that, here, the trackball replaces said touch sensitive surface/pad, and the rotating movements of said trackball towards said predefined points/zones replace the sweeping/pressing action on said predefined zones/keys of said touch sensitive surface/pad. All of the descriptions of the data entry systems of the invention using the sweeping procedures on a

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touch sensitive surface/pad having few predefined zones/keys as described before, may be applied to said data entry system using said trackball. Fig. 61a, shows as example, a trackball system 6100, that may be rotated towards four predefined zones 6101-6104, wherein to each of said zones a predefined group of symbols such as alphanumerical characters, words, part-of-a-words, etc., according to different data entry systems of the invention as described in this application and the previous applications filed by this inventor, may be assigned and used with the principles of the pressing/sweeping combined with speaking/not-speaking data entry systems of the invention. For better interaction with said trackball, said zones and said symbols assigned to them may be printed on a display unit, and said trackball may manipulate a pointer on said display unit and said zones. According to another method, said trackball may position in a predefined position, before and after each usage. the center of said trackball may be marked by a point sign 6105. To enter a symbol a user may at first put his finger (e.g. thumb) on said point and the start moving in direction(s) according to a the symbol to be entered.

With continuous reference to the current embodiment, as shown in fig.61b, for example, in order to enter the word/part-of-a-word "ram", the user may rotate the trackball 6110 towards the zones 6111,6112, and 6113, corresponding to the characters, "r", "a", and "m", and preferably, simultaneously, speak the word/part-of-a-word, "ram".

According to another embodiment of the invention, a multi-directional button having few (e.g. four) predefined pressing zones/keys, and wherein to each of said zones/keys a group of symbols according to the data entry systems of the invention is assigned, may be used with the data entry system of the invention. Said multi-directional button may provide two type of information to the data entry system of the invention. A first information corresponding to a pressing action on said button, and a second information corresponding to the key/zone of said button wherein said pressing action is applied. A user may, either press on a single zone/key of said button corresponding to (e.g. first character of) said symbol, and speak/not-speak said symbol, or he may press on a zone/key of said button corresponding to a first character of said symbol, and sweep his finger on different zones/keys of said button (e.g. as described for sweeping embodiments, for providing more information about the characters constituting said symbol, when said symbols comprises more that one character) while continuously keeping said key in pressing position, and preferably, simultaneously, speak said symbol. At the end of the entry procedure of said symbol, the user may release said continuous pressing action on said key. As mentioned, the

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principles of this embodiment the invention may be similar to those described for the sweeping procedure using a touch sensitive surface/pad having few predefined zones/keys. The difference between the two systems is that, here, the multi-directional button replaces said touch sensitive surface/pad, and single/continuous pressing actions on said predefined zones/keys of said multi-directional button replace the sweeping/pressing actions of said predefined zones/keys of said sensitive surface/pad. All of the descriptions of the data entry system of the invention using the sweeping procedures on a touch sensitive surface/pad having few predefined zones/keys as described before, may be applied to the current data entry system of the invention using said multi-directional button. Fig. 61c, shows as an example, a multi-directional button 6120, as described here, wherein said button comprises four predefined zones/keys 6121-6124, wherein to each of said zones/keys a predefined group of symbols such as alphanumerical characters, words, part-of-a-words, etc., according to different data entry systems of the invention (as described in this application and the previous applications filed by this inventor) may be assigned and used with the principles of the press and speak data entry system of the invention.

A Computing/Communication Device Having Multiple User-Interfaces

According to one embodiment of the invention, a computing communication device such as the one described earlier in this application and shown as example in several drawings such as Figs 47a-47i, may comprise a keypad in one side of it, for at least dialing phone numbers. Said keypad may be a standard telephone-type keypad. Fig 62a shows a mobile communication device 6200 comprising a data/text entry system of the invention using few keys (here, arranged in two rows 6201-6202), as described before, along with a relating display unit 6203. In order to, discretely, dial a number, a telephone-type keypad located at another side of said device may be considered. Fig. 62b shows the backside of said device 6200 wherein a telephone-type keypad 6211 is integrated within said backside of said device. A user may use the keypad 6211 to for example, conventionally, dial a number, or provide other telephone functionalities such as selecting menus. Other telephone function keys such as send/end keys 6212-6213, may also be provided at said side. A display unit 6214, disposed separately from the display unit of said data/text entry system, may also be provided at this side to print the telephony operations such as dialing or receiving numbers. A pointing device 6215 being related to the data/text entry system of the invention implemented within said device (as described earlier), may also be integrated at this side. As previously described in this and prior patent

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applications filed by this inventor, the (clicking) key(s) relating to said pointing device may be located at another side such as the opposite side of said electronic device relating to said pointing device.

A Computing/Communication Device Equipped With Handwriting Data Entry System

According to one embodiment of the invention, in addition to the data entry system of the invention, a computing and/or communication device of the invention may comprise a handwriting recognition system for at least dialing a telephone number. Said handwriting system may be of any kind such as a handwriting system based on the recognition of the sounds/vibrations of a writing tip of a device on a writing surface. This matter has been described in detail in a PCT application titled "Stylus Computer", which has been filed on December 26th, 2001. A data entry based on a handwriting recognition system is slow. On the other hand said data entry is discrete. A handwriting recognition system may, preferably, be used for short discrete data entry tasks in devices comprising the press and speak data entry system of the invention. Fig. 63a shows a computing and or communication device 6300 such as the one described earlier and shown as example in several drawings such as Figs 47a-47i. In this example, said device uses six keys 6301-6306 wherein, as described earlier, to four of said keys 6302- 6305 (2 at each end), at least the alphabetical (also, eventually the numerical) characters of a language may be assigned. The two other keys 6301 and 6306, may comprise other symbols such as, at least, some of the punctuation marks, and/or functions (e.g. for editing a text).

As described before, the data entry system of the invention using few keys is a very quick and accurate system. In some conditions, generally, when requiring a short effort such as dialing a telephone number, a user may prefer to use a discrete data entry system. Usually, a handwriting data entry system requires a touch-sensitive surface (e.g. display/pad) not being very small. It also requires a pen for writing on said surface. The handwriting data entry and recognition system invented by this inventor, generally, does not require said sensitive surface and said pen. It may be implemented within any device, and may be non-replaceable by other handwriting recognition systems in devices having a small size.

With continuous reference to Fig. 63a, the handwriting recognition system invented by this inventor, may be implemented within said device 6300. For this purpose, a writing tip 6307 may be

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provided at, for example, one end of said device. Other features such as at least a microphone, as required by said handwriting recognition system, may be implemented within said device 6300. It is understood that other handwriting recognition systems such as a system based on the optical sensors or using accelometers may be used with said device. A user, at his/her convenience, may use said data entry systems, separately and/or combined with each other. For example, said user may dial a number by using the handwriting data entry system, only. On the other hand, said user may write a text by using the press and speak data entry system of the invention. Said systems may also be combined during a data entry such as writing a text. For example, during writing a text, a user may write part of said text by using the press and speak data entry systems of the invention and switch to a handwriting data entry system (e.g. such as said handwriting system using writing sounds/vibrations, as invented by this inventor). The user may switch from one data entry system to another by, either, writing with the pen tip on a surface, or speaking/not-speaking and pressing corresponding keys.

As mentioned previously, it is understood that different key arrangements and different configurations of symbols assigned to said keys may be considered with the different embodiments based on the press and speak/not-speak data entry systems of the invention. Fig. 63b, shows as an example, according to another embodiment of the invention, a device 6310 resembling to the device 6300 of the fig. 63a, with the difference that, here, the data entry system of the inventions may use four keys at each side 6311, 6312 (one additional key at each side, wherein to each of said additional keys a group of symbols such as punctuation mark characters and/or functions may be assigned). Having additional keys may help to consider more symbols within the data entry system of the invention. It also may help to provide better input accuracy by assigning some of the symbols assigned to other keys, to said additional keys, resulting to assign less symbols to the keys used with the system.

According to another embodiment of the invention, for easily distinguishing between a character by character data entry system of the invention, and a word/part-of-a-word data entry system of the invention, the alphabetical characters may be assigned to a group of keys different from another group of keys to which the words/part-of-a-words are assigned. This may significantly enhance the accuracy of the data entry. Fig. 63c, shows as an example, a device 6320 resembling to the device 6310 of the fig. 63b, having two sets of four keys (2x2) at each side. In this example, the keys 6321-6324 may, accordingly, correspond to alphabetical characters printed on said keys, and the keys 6325-6328 may, accordingly, correspond to words/part-of-a-words starting with the

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characters printed on said keys. For example, for entering a single letter such as the letter "t", a user may press the key 6321 and speak said letter. Also for example, for entering a part-of-a-word "til", a user may press the key 6325 and speak said part-of-a-word.

It is understood that, as described and shown previously, said keys in their arrangement, may be separately disposed from said electronic device, for example, within one or more keypads wherein said keypads may, wirelessly or by wires, be connected to said electronic device. Also as mentioned and will be mentioned in different paragraphs, in any embodiment of this invention, said few number of keys, their arrangement on a device, said assignment of symbols to said key and to an interaction with said keys, said device itself, etc., are shown only as examples. Obviously, other varieties may be considered by the people skilled in the art.

It must be noted, that, as shown in the figs. 63a-63c, and the figs. 47b-47d, according to one embodiment of the invention, the data entry system of the invention may have the shape of a stylus. Also, as mentioned before, a stylus shaped computer/communication device and its features have been invented and described in a PCT application titled "Stylus Computer", which has been filed on December 26th, 2001. The stylus-shaped device of this invention may comprise some, or all, of the features and applications of said "Stylus Computer" PCT patent application. For example, the stylus-shaped device of this invention may be a cylinder-shaped device, having a display unit covering its surface. Also, for example, the stylus-shaped device of this invention may comprise a point and clicking device and a handwriting recognition system similar to that of said "stylus computer" PCT.

According to on e embodiment of the invention, the stylus-shaped device of this invention, may comprise attachment means to attach said device to a user, by attaching it, for example, to its cloth or it's ear. Fig. 63d shows as an example, the backside of an electronic device such as the device 6300 of the fig. 63a. As shown, an attachment means, 6331 may be provided within said device for attaching it to, for example, a user's pocket or a user's ear. Also a speaker 6332 may be provided within said attachment means for providing said speaker closed to the cavity of said user's ear. Also a pointing unit 6333 such as the ones proposed by this inventor may be provided within said device.

With continuous reference to the current embodiment, as shown in fig. 63e, as an example, said device 6340 may also be attached to a user's ear to permit hands-free conversation, while, for example, said user is walking or driving. The stylus-shaped of said device 6340 and the locations of said microphone 6341 and said speaker 6342 within said device and its attachment means 6343,

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respectivly, may permit to said microphone and said speaker, to be near the user's mouse and ear, respectively. It is understood that said microphone, speaker, or attachment means may be located in any other locations within said device.

A standalone-data entry unit of the invention having few keys, to comprise a display unit

According to one embodiment of the invention, a standalone data entry unit of the invention having at least few keys, as described and shown in figs 55a-55j, may comprise a display unit and be connected to a corresponding electronic device. Fig. 64a shows as an example, a standalone data entry unit 6400 based on the principles described earlier which comprises a display unit 6401. The advantage of having a display within said unit (specially, when said unit is carried as a pendent) is that, for example, a user may, insert said electronic device (e.g. a mobile phone), in for example, his pocket, and use said data entry unit for entering/ receiving data via said device. By being connected to said device, a user may see the data that he enters (e.g. a sending SMS) or receives (e.g. an incoming SMS), by seeing it on the display unit of said data entry unit. It is understood that said display unit may be of any kind and may be disposed within said unit according to different systems. For example, as shown in Fig. 64b, a display unit 6411 of a standalone data entry unit of the invention 6410 may be disposed within an interior side of a cover 6412 of said data entry unit. It is understood that a standalone data entry unit of the invention may comprise some, or all of the features (e.g. such as an embedded microphone), as described earlier in the corresponding embodiments.

As described earlier, the data entry system of the invention using few keys may be implemented within any device such as a PDA or a Tablet PC,. Fig. 65a shows as an example, an electronic device such as a Tablet PC device 6500 comprising the data entry system of the invention using few key. A key arrangement and symbol assignment based on the principles of the data entry systems of the invention may have been provided within said device. In this example, said tablet PC 6500 may comprise four keys 6501-6504 to which, at least, the alphabetical and eventually the numerical characters of a language may be assigned. In addition to said four keys, said device may comprise additional keys such as the keys 6505-6506, to which, for example, symbols such as, at least, punctuation marks and functions may be assigned. It is understood that instead of physical keys (e.g. 6501-6506), virtual (e.g. soft) keys may be defined on a display unit of said Tablet PC,

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and used with the data entry system. The data entry system of the invention, the key arrangements, and the assignment of symbols to said keys has already been described in detail. Same keys, or additional keys provided within said device, may be used in combination with a pointing device being integrated, for example, within the backside of said device. This matter has already been described in detail in different patent applications filed by this inventor. Said Tablet PC may comprise other keys 6507 for other purposes such as on/off functions, etc. Fig. 65b shows as an example, the backside of the tablet PC 6500 of the fig. 65a. As shown, for better stability during, for example, a data entry, said tablet PC may comprise one or more handling means 6511-6512 to be used by a user while for example, entering data. It is understood that said handles may be of any kind and may be placed at any location (e.g. at different sides) within said device. As mentioned before, said device may comprise a at least a pointing and clicking system, wherein at least one pointing unit 6513 of said system may be located within the backside of said device. As described before, the keys corresponding to said pointing may be located on the front side of said TabletPC (at a convenient location) to permit easy manipulation of said point and clicking device (with a left or right hand, as desired). According to one design, said Tablet PC may comprise two of said point and clicking devices, locating at a left and right side, respectively, of said Tablet PC and the elements of said pointing and clicking devices may work in conjunction with each other. It is understood that any kind of microphone such as a built-in microphone or a separate wired/wireless microphone may be used to perceive the user's speech during the data entry. These matters have already been described in detail. Also a standalone data entry unit of the invention may be used with said electronic device.

Also, the data entry system of the invention using few keys may be used in many environments such as automotive, simulation, or gaming environments. According to one embodiment of the invention, the keys of said system may be positioned within a vehicle such as a car. Fig. 65c shows a steering wheel 6520 of a vehicle comprising few keys, (in this example, arranged on opposite sides 6521-6522 on said steering wheel 6520) which are used with a data entry system of the invention. The data entry system of the invention, the key arrangements, and the assignment of symbols to said keys has already been described in detail. As shown here, a user may enter data such as text while driving. For this purpose, while holding said steering wheel 6520 with his hands, for example, during driving, a driver may use the press and speak data entry system of the invention by pressing said keys and speaking/not-speaking accordingly. It is understood that any kind of microphone such as a built-in microphone or a wired/wireless microphone such as a

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Bluetooth microphone may be used to perceive the user's speech during the data entry. Also any key arrangement and symbol assignment to said keys may be considered in any location within any kind of vehicle such as an aircraft.

As mentioned before, the great advantage of the data entry system of the invention, in general, and the data entry system of the invention using few keys, in particular (e.g. wherein the alphabetical and eventually the numerical characters are assigned to four keys arranged in two pairs of adjacent keys, and wherein a user may position each of his two thumbs on each of said pair of keys to press one of said keys), is in that a user may provide a quick and accurate data entry without the necessity of looking (frequently) at neither the keys, nor at the display unit.

It is understood that in the environments (e.g. darkness) and situations (e.g. while driving) that looking at a corresponding display for input verification is not possible/permitted, an informing system may be used to inform the user of one or more last symbols/phrases that were entered. Said system may be a text-to-speech TTS system wherein the system speaks said symbols as they were recognized by the data entry system of the invention. The user may be required to confirm said recognized symbols, by for example, not providing any action. Also for example, if the recognized symbol is an erroneous symbol, the user may provide a predefined action such as using a delete key for erasing said symbol. He then may repeat the entry of said symbol.

Networking Implementation

As mentioned in the previously filed patent applications relating to the data entry systems of the invention, the data entry system of the invention may be implemented within a networking system such as a local area networking system comprising client terminals connected to a server/main-computer. According to one embodiment of the invention, in said networking system, said terminals, generally, may be, either small devices with no processing capabilities, or devices with at most limited processing capabilities. In contrast, the server computer may have powerful processing capabilities. In this case the server computer may process information transmitted to it by a terminal of said networking system. By using a terminal, a user, may, according to the principles of the data entry system of the invention, input information (e.g. key press, speech) concerning the entry of a symbol to said server. After processing said information and recognizing a corresponding symbol, the server computer may transmit the result to the display unit of said terminal. It is

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understood that said terminal may comprise all of the features of the data entry systems of the invention (e.g. such as key arrangements, symbols assigned to said keys, at least a microphone, a camera, etc.), necessary for inputting and transmitting said information to said server computes. Fig. 66 shows as an example, terminals/data entry units 6601-6606 connected to a central server/computer 6600, wherein the results of part of different data/text entered by different data entry units/terminals are printed on the corresponding displays.

The above-mentioned embodiment may be used in many environments such as in an airline aircraft. In the recent passenger aircrafts, each passenger seat comprises a remote control unit having limited number of keys which is connected to a display unit usually installed in front of said seat (e.g. usually situated at the backside of the front seat). Said remote controls may be combined with a built-in or separate microphone, and may be connected to a server/main computer in said aircraft. Instead of said remote control, other personal computing or data entry devices may be used by connecting them to said server/main computer (e.g. via a USB port installed within said seat). As mentioned, said device may, for example, be a data entry unit of the invention, a PDA, a mobile phone, or even a notebook, etc. This may become the most attractive entertainment service supplied by airlines to their passenger during a flight. Passengers may edit letters, send messages, use the internet, or chat with other passengers in said aircraft. A similar system may be implemented within a networking system of organizations, or businesses (e.g. the point-of-sales of chain stores), wherein data entry units comprising necessary features (e.g. keys, microphone) for inputting data/text based on the data entry systems of the invention, may be used in connection with a server computer. The above-mentioned data/text entry system of the invention permits a quick and accurate data entry system through terminal equipments, generally, with no processing capabilities, or, having limited processing capabilities.

The data entry system of the invention using few keys (e.g. including four keys, wherein at least the alphabetical characters are assigned to said keys), may be useful in many circumstances. As mentioned before, instead of using keys, a user may use, for example, his face/head/eyes movements combined with his voice for a data/text entry based on the principles of the data entry systems of the invention. According to one embodiment of the invention, for this purpose, instead of being assigned to few key, symbols (e.g. at least, substantially, all of the alphabetical characters of a language) as described in this application and previous applications, may be assigned to the movements of, for example, a user's head in, for example, four directions (e.g. left, right, forward,

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backward). The symbol configuration assignments may be the same as described for the keys. For example, if the letters "Q", "W", "E", "R", "T", and "Y", are assigned to the movement of the user's head to the left, for entering the letter "t", a user may move his head to the left and say "T". Same principles may be assigned to the movements of a use's eye (e.g. left, right, up, down). By referring to the last mentioned example, for entering the letter "T", a user may move his eye to the left and say "T". The head, eye, face, etc., movements may be detected by means such as a camera or sensors provided on the user's body.

The above-mentioned embodiments, which do not use keys, may be useful for data entry by people having limited motor-capabilities. For example, a blind person, may use the movements of his/her head combined with his voice, and a person who is not be able to use his fingers for pressing keys, may use his eye/head movements combined with his voice .

According to another embodiment of the invention, as mentioned before, instead of assigning the symbols to few keys, said symbols may be assigned to the movements of a user's fingers. As an example, Fig. 67, shows a user's hands 6700 wherein to four fingers 6701-6704 (e.g. two fingers in each hand) of said user's hands a configuration of symbols based on the configuration of symbols assigned to few key of the invention, may be assigned. For example, to a predefined movement or gesture of the finger 6701, the letters "Q", "W", "E", "R", "T", and "Y", (or words/part-of-a-words, starting with said letters), may be assigned. As an example, said movement may be moving said finger downward. Also, for example, for entering the letter "T", a user may move the finger 6701 downward, and, preferably, simultaneously, say "T". It is understood that any configuration of symbols may be considered and assigned to any number of a user's finger, based on the principles of the data entry systems of the invention as described in this application and the applications filed before.

With the continuous description of the above-mentioned embodiment, many systems may be considered for detecting the movements/gestures of said user's fingers. For example, the movements of a user's finger may be detected by a position of said finger relative to another finger. According to one method, as shown in fig. 67, sensors 6705-6706 (e.g., here, in form of rings) may be provided with the fingers 6701-6702, used for data entry. According to one embodiment, a movement of a user's finger may be recognized based on for example, vibrations perceived by said sensors based on the friction of said adjacent rings 6705-6706 (e.g. it is understood that the surface of said rings may

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be such that the friction vibrations of a downward movement and an upward movement of said finger, may be different).

According to another method, sensors 6707, 6708, may be mounted-on ring-type means (or other means mounted on a user's fingers), and wherein positions of said sensors relating to each other, may define the movement of a finger.

It is understood that finger movement/gesture detecting means, described here, are only described as examples. Other detecting means such as optical detecting means may be considered.

Word Categories

According to one embodiment of the invention, the word/part-of-a-word level data entry system of the invention may be used in predefined environments, such as a medical or a juridical environment. In this case, instead of using a large database of words/part-of-a-words with said system, limited database of words/part-of-a-words relating to said environment may be considered. This will significantly augment the accuracy and speed of the system. Out-of-said-database words/part-of-a-words may be entered, character by character.

A mode key for temporary character by character data entry

According to one embodiment of the invention, in the data entry system of the invention combining character by character data/text entry and word/part-of-a-word data entry, a predefined key may be used to inform the system that, temporarily, a user is entering single characters. For example, during a text entry, a user, may enter a portion of a text according to principles of the word/part-of-a-word data entry system of the invention, by not pressing said predefined key. The system, in this case, may not consider the letters assigned to the keys that said user presses. The system, may only consider the words/part-of-a-words assigned to said key presses. If said predefined key is pressed for example, simultaneously with other key presses relating to said text entry, then the system may only considers the single letters assigned to said key presses, and ignores the word/part-of-a-word data entry assigned to said key presses.

Phrase entry

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According to another embodiment of the invention, as mentioned before, the data entry system of the invention may comprise a phrases-level text entry system. For example, after entering a whole phrase, by for example, using the data entry system of the invention combining character by character data/text entry and/or word/part-of-a-word data entry system of the invention, the system may analyze the recognized words of said phrase, and based on the linguistically characteristics/models of said language and/or the sense of said phrase, the system may correct, add, or replace some of the words of said phrase to provide an error-free phrase. For example, if a user enters the phrase "let's meet at noon", and the recognized words are "lets meet at noon", by analyzing said phrase, the system may replace the word "lets", by the word "let's" and provide the phrase "let's meet at noon". The advantage of this embodiment is that because the data entry system of the invention is a highly accurate system, the user may not have to worry about correcting few errors occurred during the entry of a phrase. The system may, automatically, correct said errors. It is understood that some symbols such as ".", or a return command, provided at the end of a phrase, may inform the system about the ending point of said phrase.

Phrase Entry

According to one embodiment of the invention, a symbol assigned to an object such as a key, may represent a phrase. For example, a group of words (e.g. "Best regards") may be assigned to a key (e.g. preferably, the key representing also the letter "b"). A user may press said key and provide a speech such as speaking said phrase or part of said phrase (e.g. saying "best regards" in this example), to enter said phrase.

Different modes, to single characters, and to words/part-of-a-words

As previously mentioned, the data entry system of the invention may use different modes (e.g. different interactions with an object such as a key) wherein to each of said modes a predefined group of symbols, assigned to the object, may be assigned. Also as mentioned, for example, said modes may be a short/single pressing action on a key, a long pressing action on a key, a double pressing action on a key, short/long/double gesture with a finger/eye etc.

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According to one embodiment of the invention, single characters, words, part-of-a-words, phrases, etc. comprising more than character, or phrases, may be assigned to different modes. For example, single characters such as letters may be assigned to a single/short pressing action on a key, while words/part-of-a-words comprising at least two characters may be assigned to a double pressing action or a longer pressing action on a key (e.g. the same key or another key,), or vise versa (e.g. also for example, words/part-of-a-words comprising at least two characters may be assigned to a single pressing action on a different key) . Also for example, as mentioned before, part of the words/part-of-a-words causing ambiguity to the speech (e.g. voice, lip) recognition system may be assigned to a double pressing action on a key. Also different single characters, words, etc., may be assigned to slight, heavy, or double pressing actions on a key. Also for example, words/portions-of-words which do not provide ambiguity with single letters assigned to a mode of interaction with a key may be assigned to said mode of interaction with said key. Different modes of interactions have already been described earlier in this application and in other patent applications filed by this inventor.

It is understood that different predefined laps of time/pressure levels may be considered to define a pressing action/mode. For example, a short time pressing (e.g. up to 0.20 second) action on a key may be considered as a short pressing action (to which a first group of symbols may be assigned), a longer time pressing action (e.g. greater than 0.20 to 0.40 second) may be considered as a long pressing action (to which a second group of symbols may be assigned), and a still longer pressing action (e.g. greater than 0.40 second) may be considered as another mode to which the repeating procedure (e.g. described before) may be assigned. For example, to input the letter "a", a user may short-press a key (wherein the letter "a" is assigned to said key and said interaction with said key), and say "a". He may longer-press said key and say "a" to, for example, get the word/part-of-a-word "ai" (e.g. wherein the word/part-of-a-word "ai" is assigned to said key and said interaction with said key). The user may press said key and say "a", and keep said key in pressing position as much as needed (e.g. still longer period of time) to input, repeatedly, the letter "a". The letter "a" will be repeated until the user releases (stops said pressing action on) said key.

As mentioned before, words comprising a space character (e.g. before/after said word) may be assigned to a mode of interaction of the invention with an object such as a key.

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According to one embodiment of the invention, said mode of interaction with a key may be said longer/heavy pressing action of said key as just described.

As mentioned before, any combination of objects, modes of interaction, groups of characters, etc., may be considered and used with the data entry systems of the invention.

Backspace

A backspace procedure erasing the word/part of the word already entered, have been described before in this application. According to different embodiments, at least one kind of backspace procedure may be assigned to at least one mode of interaction. For example, a backspace key may be provided wherein by pressing said key, at least one desired utterance, word/part-of-a-word, phrase, etc. may be erased. For example, each single-pressing action on said key may erase an output corresponding to a single utterance before a cursor situated after said output. For example, if a user has entered the words/parts-of-a-word "call", and "ing", according to one procedure, he, for example, may erase the last utterance "ing", by single-pressing said key one time. Another single-pressing action on said key may erase the output "call", corresponding to another utterance. According to predefined procedure, for example, a single/double-pressing action on said key may erase the whole word "calling". Thus based on the principles of backspace procedure of the invention, obviously, many predefined erasing procedures may be considered by the people skill in the art.

Miniaturized keyboards

Miniaturized keyboards are used with small/mobile electronic devices. The major inconvenience of use of said keyboards is that because the keys are small and closed to each other pressing a key with a user's finger may cause mispressing said key. That's why, in PDAs, usually, said keyboards are pressed with a pen. The data entry system of the invention may eliminate said shortcoming. The data entry system of the invention may use a PC-type miniaturized/virtual keyboard. By targeting a key for pressing it, even if a user misspresses said key (by for example, pressing a neighboring key), according to one embodiment of the invention and based on the principles of the date entry system of the invention, the user may speak a

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speech corresponding to said key. If the speech of the user does not correspond to the key being pressed, then the system may suggest that the said key was mistakenly pressed. the system, then, may consider that neighboring keys and correspond said speech to one of said keys. By using this embodiment, miniaturized keyboards may easily be used with normal user fingers, easing and speeding up the data entry through those keyboards. It is understood that all of the features and systems based on the principles of the data entry systems of the invention may be considered and used with such keyboerd. For example, the word/part-of-the-word data entry system of the invention may also be used with this embodiment.

Also, as mentioned and demonstrated through different embodiments, a principle of the data entry system of the invention, is to select (e.g candidate) a predefined smaller number of symbols among a larger number of symbols by assigning said smaller number of symbols to a predefined interaction with a predefined object, and selecting a symbol among said smaller number of symbols by using/not-using a speech corresponding to said symbol.

Also as mentioned, said object and said interaction with said object may be of any kind. As described before, for example, said object may be parts of a user's body (such as fingers, eyes, etc.), and said predefined interaction may be moving said object to different predefined directions such as left, right, up, down, etc.

According to one embodiment of the invention, said object may be an electronic device and said interaction with said object may be tilting said electronic device in predefined directions. For example, each of said different smaller groups of symbols containing part of the symbols of a larger group of symbols such as letters, punctuation marks, words/part-of-a-words, functions, etc. (as described before) of a language, may be assigned to a predefined tilting/action direction applied to said electronic device. Then still based on principles of the data entry system of the invention (as described before), one of said symbols of said smaller group of symbols may be selected by providing/not providing a speech corresponding to said symbol. Fig.68 shows, as an example, an electronic device such as a mobile phone 6800. As an example, four groups of symbols 6801-6804 may be assigned to four tilting directions (e.g. left, up, right, down) 6805-6808 being applied to said device. Still as an example, to enter the letter "t", a user may tilt the device to the right and pronounce a speech corresponding to said letter (e.g. saying said letter). One of the advantages of the tilting system of the invention is that the system may not use any key and may use one hand for data entry. It also permits to provide a large display within the

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device. Fig 68a shows an electronic device 6810 using the tilting data entry system of the invention, and wherein a large display 6811 substantially covers the surface of at least one side of said electronic device. It is understood a mode such as a single/double pressing action on a key, here may be replaced by a single/double tilting direction/action applied to the device.

Treatment of apostrophe

According to one embodiment of the invention, predefined words comprising an apostrophe may be created and assigned to one or more keys and be entered. For example, words such as "it's", "we're", "he'll", "they've", "isn't", etc., may be assigned to at least one predefined key. Each of said words may be entered by pressing a corresponding key and speaking said word.

According to another embodiment of the invention, for the same purpose, (e.g. abbreviated) words such as " 's ", " 'll ", " 've ", " n't ", etc., may be created and assigned to one or more keys. Said words may be pronounced by their original pronunciations. For example:

" 's " may be pronounced " s/is/has ";
" 're " may be pronounced " are";
" 've" may be pronounced " have";
" n't " may be pronounced " not";etc.

Said words may be entered to, for example, being attached to the end of a previous word/character already entered. For example, to enter the word "they've", a user may enter two separate words "they" and " 've " (e.g, entering according to the data entry systems of the invention) without providing an space between them. As mentioned, the speech assigned to a word comprising an apostrophe (e.g. an abbreviated word such as "n't" of the word "not") may be the same as the original word. For example, words "n't" and "not", both, may be pronounced "not". In this case each of said words may be assigned to a different mode of interaction with a same key, or each of them may be assigned to a different key. For example, the user may single-press a corresponding key (e.g. a predefined interaction with said key to which the word "not" is assigned) and say "not" to enter the word "not". To enter the word "n't", the user may, for example, double-press the same key (e.g. a predefined interaction with said key to which the word "n't" is assigned) and say "not". According to another embodiment of the invention,

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part/all of the words comprising an apostrophe may be assigned to the key that the apostrophe punctuation mark itself is assigned.

According to one embodiment of the invention, a part-of-a-word such as " 's" , " 'd" , etc., comprising an apostrophe may be assigned to a key and a mode of interaction with said key and be pronounced as a corresponding letter such as "s", "d", etc. Said key or said mode of interaction may be different than that assigned to said corresponding letter to avoid ambiguity.

Configuration of letters on four keys

As mentioned previously, to augment the accuracy of the speech recognition system, symbols having closed pronunciations (e.g. causing ambiguity to the speech recognition for selecting one of them) may be assigned to different keys. Fig. 69 shows another example of assignment of alphabetical characters to four keys 6901-6904 of a keypad 6900. Although, they may be assigned to any key, words/part-of-a-words comprising more that one character, preferably, may be assigned to the keys representing the first character of said words and/or said part-of-a-words. The arrangement of characters of this example not only eliminates the ambiguity of character by character text entry system of the invention using four keys comprising letters, but it also significantly reduces the ambiguity of the word/part-of-a-word data entry system of the invention. For example, letter "n", and words/part-of-a-words starting with "n" may be assigned to the key 6903, while the letter "i" and words/part-of-a-words starting with "n" may be assigned to the key 6901. This is because, for example, the word "in"(assigned to the key 6901), and the letter "n" (assigned to the key 6903) may have, ambiguously, substantially similar pronunciations. Obviously, as mentioned before, other configuration of symbols on the keys or any other number and arrangement of keys based on principles just described may be considered by the people skilled in the art.

Also, as mentioned earlier, according to another example, if the speech of two symbols have substantially similar pronunciations and said symbols are assigned to a same key and are inputted by a same kind of interaction (e.g. combined with the corresponding speech) with the key, to avoid ambiguity, to at least a first symbol of the symbols another speech having non-substantially similar pronunciation with the second symbol may be assigned. For example, if two symbols such a "I" and "hi" (e.g. respectively, a letter and a word, having substantially

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similar pronunciations), are assigned to a key and are inputted, by for example, a single pressing action with the key while speaking them, to avoid the ambiguity, for example, another speech such as "hey" (which is substantially differently pronounced than "i"), may be assigned to the symbol (e.g. word) "hi."

Fast typing

One of the advantages of assignment of at least alphabetical characters to only four keys as shown previously and here in fig. 69a, is that a user may lay each of two of his fingers (e.g. left, and right thumbs) 6915, 6916 on a corresponding column of two keys (e.g. two keys 6911-6912, and two keys 6913-6914, in this example) so that said finger, simultaneously, touches said two keys. This permits to not remove (or rarely remove) the fingers from the keys during text entry and therefore a user knows which key to press without looking at the keypad. This permits fast typing even while said user is in motion. It is understood that for this purpose, the size of the keys, the distance between them, and other parameters such as physical characteristics of said keys, may be such that to optimize the above-mentioned procedure.

As mentioned before, it is understood that according to needs, other configurations of keys may be considered. For example, said four keys may be configured in a manner that, when a user uses a single finger to enter said text, his finger may, preferably, be capable to simultaneously touch said four keys. Also different predefined number of keys to which said at least alphabetical characters are assigned, may be considered according to different needs.

As mentioned before and demonstrated in drawings such as fig. 52, multi-directional keys may be used for the data entry system of the invention. Also, as mentioned, different number of keys, different types/configuration of keys may be considered to be used with the data entry system of the invention. Still as mentioned, alphabetical-letters or text-characters of a language may be assigned to, for example, four keys used with the data entry system of the invention. Fig. 69b shows as an example, an electronic device 6920 having two multidirectional (e.g. four directional, in this example) keys 6927-6928 wherein to four of their sub-keys 6921-6924, alphabetical characters of a language are assigned. An arrangement and use of four keys on two sides of an electronic device for data (e.g. text) entry has been described before and been shown by exemplary drawings such as fig.63b.

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A device having an extendable flexible display unit

As described before, according to one embodiment of the invention, a device comprising a flexible display such as an OLED display and the data entry system of the invention and its features may be provided. Figure70a shows as an example a flexible display unit 7000. Said display unit may be retracted by for example, rolling it at, at least, one of its sides 7001. Said display may be extended by unrolling it. Fig. 70b shows an electronic device such as a computer/communication unit 7010 comprising a flexible display unit 7011. Said electronic device also may comprise the data entry system of the invention and a key arrangement of the invention. In this example, said device comprises two sections 7018-7019, on which said keys 7012-7013 are disposed. The components of said device may be implemented on at least one of said sections 7018, 7019 of said device 7010. Said two sections may be connected to each others by wires or wirelessly. Also, at least part of said display unit may be disposed (e.g. rolled) in at least one of said two sections 7018-7019 of said device. Said two sections of said device may be extended and retracted relative to each other at a predefined distance or at any distance desired by a user (e.g. the maximum distance may be a function of the maximum length of said display unit). In this examples, said two sections are, for example, in a moderate distance relative to each other. By extending said two sections relative to each other said display unit may also be extended (e.g. by unrolling). A user may keep each of said two sections 7018-7019 in each of his hands and use the keys 7012-7013 of each of said sections with a corresponding hand for entering data by, for example, the data entry system of the invention, into said device 7010 and said display unit 7011of said device. Fig. 70c, shows, said device 7010 and said display unit 7011 in a more extended position. A means such as at least a button may be used to release, and/or fix, and/or retract said sections relative to each other. These functions may be automatically provided by means such as a button and/or a spring. Said functions are known by people skilled in the art. Fig. 70d shows said device 7010 in a closed position. As mentioned, said device may be a communication device. In this example, said device may be used as a phone unit. For this purpose, a microphone 7031, and a speaker 7032 may be disposed within said device, (preferably at its two ends) so that the distance between said microphone and said speaker correspond to a user's mouth and ear. Because said display is a flexible display, it may be fragile. As shown in fig. 70e, to protect said display of said device in extended position, said

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device 7010 may comprise multi-sectioned, for example, substantially rigid elements 7041also extending and retracting relative to each other while extending and retracting said two sections of said device, so that, in extended position said sections provide a flat surface wherein said display (not shown) may be lying on said surface. It is understood that said elements may be of ant kind and comprise any form and any retracting/extending system. Also, said display unit may be retracted/extended by different methods such as folding/unfolding or sliding/unsliding methods.

According to one embodiment of the invention, as shown in fig.70f, an electronic device 7010 such as the one just described, may comprise a printing/scanning/copying unit (not shown) integrated within it. Although the device may have any width, preferably, the design of said electronic device (e.g. in this example, having approximately the height of an A4 paper) may be such that a user may feed an A4 paper 7015 to print a page of a document such as an edited letter.

Providing a complete solution for a mobile computing/ communication device may be extremely useful in many situations. For example, a user may draft documents such as a letter and print them immediately. Also for example, a salesman may edit a document such as an invoice in client's promises and print it for immediate delivery.

According to another embodiment, a foldable device comprising an extendable display unit and the data entry system of the invention may be considered. Said display may be a flexible display such as an OLED display. Fig. 70g shows said device 7050 in a closed position. Fig 70h shows said device 7050 comprising said extendable display unit 7051, and the keys 7053-7054 of said data entry system. Said device may have communication abilities. In this example, a microphone 7055 and a speaker 7056 are provided within said device, preferably, each on a different section of said device.

It is understood that this embodiment and the relating drawings are described and shown as examples. Many other embodiments and drawings based on the principles of this invention may be considered by people skilled in the art. For example, by referring to fig. 70b, when extending said display unit to a desired length, only said extended portion of said display unit may be used by said device. For example, a system such as the operating system of said device may manage and direct the output to said opened (e.g. extended) portion of said display unit. Also, said device may at least comprise at least part of the features of the systems described in this and other patent applications filed by this inventor.

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A attachable/detachable data entry unit

As described before, an electronic device such as a Tablet PC may comprise the data entry features of the invention, such as a key configuration of the invention disposed on a front side of said device, a pointing device disposed at its backside wherein said pointing device uses at least a key in on the front side of said device and vise versa. Also as mentioned before, said device may comprise an extendable microphone/camera extending from said device towards a user's mouth. As described and shown before, said features may constitute an external data entry unit for said device. Fig. 71a, shows as an example, a detachable data entry unit 7100 for an electronic device such as a Tablet PC. Said unit may comprise two sections 7101-7102 wherein each of said sections comprises the keys 7103-7104 of a key arrangement of the invention to provide signals to said device. In this example, Said sections 7101, 7102 are designed to attach to the two extreme sides of said electronic device. At least one of said sections may comprise a pointing device (e.g. a mouse, not shown) wherein when said detachable data entry unit is attached to said electronic device, said pointing device may situate within the backside of said device and at least a key (e.g. a key of said key configuration) relating to said pointing device will be situated at the front side of said device, so that a user may simultaneously use said pointing device, and said at least one related key and/or configuration of keys disposed on said section with at least a same hand. Said data entry unit may also comprise an extendable microphone 7105 and/or camera 7106 disposed within an extendable member 7107 to perceive a user's speech. The features of a data entry unit of the invention are, earlier, described in detail. The two sections 7101-7102 of said data entry unit may be attached to each other by means such as at band(s) (e.g. elastic bands) 71010 so that to fix said unit to said electronic device. Said data entry unit may be connected to said device by wires 7108. It may be connected through, for example, a USB element 7109 connecting to a USB port of said electronic device. Said data entry unit may also be, wirelessly, connected to said device. Also, sections 7101, 7102 may be separate sections so that instead of attaching them to the electronic device a user may for example hold each of them in one hand (e.g. his hand may be in his pocket) for data entry.

Other attachment means for attaching said data entry unit to said electronic device may be considered. For example, as shown in fig. 71b, said device 7100 may comprise sliding and or attaching/detaching members 7111-7112 for said purpose.

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It is understood that said data entry unit may comprise any number of sections. For example, said data entry unit may comprise only one section wherein the features such as the those just described (e.g. keys of the keypad, pointing device, etc. may be integrated within said section.

Fig. 71c shows said data entry unit 7100 attached/connected to an electronic device such as a computer (e.g. a tablet PC). As shown, the keys of said data entry unit 7103-7104 are situated at the two extremes of said device. a microphone is extended towards the mouth of a user and a pointing device 7105 (not shown, here in the back or on the side of said device) is disposed on the backside of said data entry unit (e.g. and obviously at the backside of said device). At least a key 7126 corresponding to said pointing device is situated on the front side of said data entry unit. Obviously, said pointing device and itds corresponding keys may be locates at any extreme side (e.g. left, right, down). Also, multiple (e.g. two, one at left, another at right) pointing and clicking devices may be used wherein the elements of said multiple pointing and clicking device may work in conjunction with each other. Using his two hands, a user may hold said device, and simultaneously use said keys and said microphone for entering data such as a text by using the data entry systems of the invention. Said user, may also, simultaneously, use said pointing device and its corresponding keys.

It is understood that said data entry unit may also, wirelessly, connected to a corresponding device such as Said Tablet PC. Also, said pointing device and/or its keys, together or separately, may be situated on any side of said electronic device.

According to one embodiment of the invention, a flexible display unit such as an OLED display may be provided so that, in closed position, said display unit has the form of a wrist band to be worn around a wearers wrist or attached to a wrist band of a wrist-mounted device and eventually be connected to said device. Fig. 72 a shows an as example, a wrist band 7211 of an electronic device 7210 such as a wrist electronic device wherein to said band said display unit in closed position is attached. Fig 72b shows said display unit 7215 in detached position. Fig. 72c shows said display unit 7215 in an open position.

According to one embodiment of the invention, to help the system to better distinguish between the speech of two symbols such as letters/words/part-of-a-words having substantially similar pronunciations, at least a different phoneme-set being substantially similar with a first symbol of said symbols but being less resembling to the other symbol, may be assigned to said

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first symbol, so that when user speaks said first symbol, the chances of recognition of said symbols by the voice recognition system augments. For example, if the letter "d" and the letter "b" are assigned to a same predefined interaction with a same key, to the speech of the letter "d" in addition to the phoneme-set "dē", another resembling phoneme-set "tē" (in this example, letter "t" is assigned to another key) may also be assigned. On the other hand, in addition to in addition to the phoneme-set "bē", another resembling phoneme-set "pē" (in this example, letter "p" is assigned to another key) may also be assigned. Letters "b" and "d" have similar substantially similar pronunciations, but the pronunciations of the letters "t" (phoneme-set "tē") and "p" are more significantly different. For example, if a user presses the key corresponding to the letters "b" and "d" and says "dē", the system may erroneously recognize said speech as "tē". In this case the system will provide the character assigned to said speech combined with said key press and provides the letter "d". It is understood that examples provided here are only to demonstrate this embodiment. Various configuration and assignments of phonemes/phoneme-sets to any letters/words/part-of-a-words based on the principled described may be considered by the people skilled in the art.

The systems, features, enhancements, etc., described in this application and other applications filed by this inventor may apply to all of the embodiments of the invention. Also an embodiment of the invention may function separately or it may function combined with one or more other embodiments of the invention.

Thus, while there have been shown and described and pointed out fundamental novel features of the invention as applied to alternative embodiments thereof, it will be understood that various omissions and substitutions and changes in the form and details of the disclosed invention may be made by those skilled in the art without departing from the spirit of the invention. It is the intention, therefore, to be limited only as indicated by the scope of the claims appended hereto. It is to be understood that the drawings are not necessarily drawn to scale, but that they are merely conceptual in nature.

For example, although, in different embodiments a telephone-type keypad was used to demonstrate different embodiments of the invention, obviously, any kind of keypad with any kind of configurations of symbols assigned to the keys of said keypad may be used with the embodiments of the invention.

For not frequently repeating the principles of the data entry system of the invention, in

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many paragraphs of this application there is mentioned that one or more symbol such as character/word/portion-of-a-word/function, etc., may be assigned (e.g. correspond) to a key (or an object other than a key). It is understood that, the symbols are supposed to be inputted by a predefined interaction with the key according to the principles of the data entry systems explained in many other embodiments. For example, unless otherwise mentioned, said symbols, may preferably be inputted by a predefined simplest interaction with said key which may be a single-pressing action on said key (as explained in many embodiments of the invention). Also, in many paragraphs after explaining the assignment of symbols such as letter/phoneme-sets/character (letter)-sets/chain-of-letters/etc (e.g. generally, symbols to be spoken) to a key, to avoid the repeating of the principles of the data entry system of the invention for inputting said symbols, said principles may not have been mentioned. In is understood that, unless otherwise mentioned, obviously, (as explained in many embodiments of the invention) said kind of symbols (e.g. generally, symbols to be spoken), are preferably intended to be entered by a corresponding pressing action on a corresponding key combined with, preferably simultaneously, the speech corresponding to said symbol.

It must be noted that in many paragraphs of this application the terms "character-set" or "character set" have been used to define a chain of characters.

Although in different embodiments of the invention, a voice recognition system have been mentioned or intended to be used to perceive and recognize a user's speech, a lip-reading system may be used instead-of or in-addition-to said voice recognition system to perceive and recognize said user's speech (and vise versa).

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1. A data entry system comprising;

a number of predefined input signals provided by interacting with the input means of an object, including predefined types of interaction provided with a number of keys, such as physical or virtual keys, corresponding to an electronic device for at least entering arbitrary characters wherein,

said data entry system uses a number of symbols including at least the letters of the alphabet of at least one language and wherein said symbols are assigned to said input signals such that at least two of said letters are assigned to at least one of said input signals, and wherein a symbol assigned to an input signal is entered by a procedure of input including:

providing said input signal; and

providing a speech information corresponding to said symbol for selecting said symbol among the symbols that are assigned to said input signal, wherein said speech information is detected and analyzed based on at least one of, a user's voice and a user's lip movements, and wherein said data entry system uses at least one database of words such that in order to enter a word of said a least one database a user uses one of at least a first and a second methods of input wherein,

a first method includes combining information corresponding to said word, wherein said combined information includes:

a first information including entering at least one character such as a letter of said word through said procedure of input, and

a second information including providing the input signals corresponding to at least some of the other characters of said word without providing speech; and

said second method including providing information including the input signals corresponding to substantially all of the characters of said word without providing a speech, wherein the system compares said information with the information corresponding to the words of said database and proposes a corresponding word.

2. The data entry system according to claim 1, wherein at least the letters having ambiguously resembling speech are assigned separately from each other to different input signals.

3. The data entry system according to claim 1, wherein a symbol such as a character other than a letter may be entered by providing a predefined type of interaction with said input signal without speaking.

4. The data entry system according to claim 1, wherein substantially all of said letters are assigned to four of said input signals.

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5. A data entry system comprising:

a number of predefined input signals provided by interacting with the input means of an object including predefined types of interaction provided with a number of keys, such as physical or virtual keys, corresponding to an electronic device for at least entering arbitrary characters wherein,

said data entry system uses a first type of symbols including at least the letters of the alphabet of at least one language and a second type of symbols substantially each including a portion of a word, such as a chain of characters generally corresponding to a syllable of a word of a language, wherein said symbols correspond to said input signals such that at least two of said letters are assigned to at least one of said input signals, and wherein a symbol corresponding to said at least one input signal is entered by a procedure of input including:

providing said at least one input signal; and

providing a speech information corresponding to said symbol for selecting said symbol among the symbols that are represented by said at least one input signal wherein said speech information is detected and analyzed based on at least one of, a user's voice and a user's lip movements.

6. The data entry system according to claim 5, wherein said data entry system uses a number of words wherein each of said words includes at least one of said symbols such that in order to enter one of said words a user provides information corresponding to the symbols of said word through said procedure of input.

7. The data entry system according to claim 5, wherein said data entry system uses a number of words wherein each of said words is composed of at least one of said symbols, wherein in order to enter one of said words a user provides a combined information corresponding to said word, wherein said combined information includes:

a first type of information including entering precisely at least one of the symbol of said word through said procedure of input; and

a second type of information including providing the input signals corresponding to at least some of the other characters of said word without providing a corresponding speech.

8. The data entry system according to claim 5, wherein said at least some of the other characters of said word is substantially all of the other characters of said word.

9. The data entry system according to claim 5, wherein said providing at least an input signal

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corresponding to a symbol of the second types of symbols is providing an input signal corresponding to a character, generally the beginning character, of said symbol and speaking said symbol.

10. The data entry system according to claim 5, wherein said providing at least one input signal corresponding to a symbol of the second types of symbols is providing the input signals corresponding to substantially all of the characters of said symbol and speaking said symbol.

11. The data entry system according to claim 5, wherein said data entry system further comprises a third group of symbols including the complete words of a language, wherein each of said words generally comprises one syllable.

12. The data entry system according to claim 5, wherein at least the letters having ambiguously resembling speech are separately from each other assigned to different input signals.

13. The data entry system according to claim 5, wherein a symbol such as a character other than a letter may be entered by providing a predefined type of interaction with said input signal without speaking.

14. The data entry system according to claim 5, wherein each of two different types of interaction with an input means provides a different input signal, wherein a first input signal corresponds to the entry of a character such as a letter, and a second input signal corresponds to the entry of a portion of a word.

15. The data entry system according to claim 5, wherein substantially all of said letters are assigned to four of said input signals.

16. The data entry system according to claim 15, wherein said substantially all of said portions of words are represented by said four input signals.

17. A data entry system comprising:

a number of predefined input signals provided by interacting with the input means of an object including predefined types of interaction provided with a number of keys such as physical or virtual keys, corresponding to an electronic device, for at least entering arbitrary characters wherein,

said data entry system uses a number of symbols including at least the letters of the alphabet of at least one language and wherein said symbols are assigned to said input signals such that at least two of

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said letters are assigned to at least one of said input signals and wherein,

said data entry system uses a number of words wherein each of said words includes at least one of said symbols, wherein in order to enter one of said words a user provides at least the input signals corresponding to the symbols of said word and the system compares said sequence of input signals with the input signals corresponding to each of at least some of said words and proposes a corresponding word and wherein,

the input means to which substantially all of said letters of a language are assigned are arranged such that one finger tip of said user may touch substantially all of them simultaneously.

18. The data entry system according to claim 17, wherein at least the input means to which said letters are assigned, are split into two groups wherein each group is used by the finger of a different user's hand.

19. The data entry system according to claim 17, wherein at least the input means to which said letters are assigned are split into two groups and are disposed on opposite sides of an electronic device.

20. The data entry system according to claim 17, wherein further a symbol assigned to an input signal is entered by a procedure of input including;

providing said input signal; and

providing a speech information corresponding to said symbol for selecting said symbol among the symbols that are assigned to said input signal, wherein said speech information is detected and analyzed based on at least one of a user's voice and a user's lip movements.

21. The data entry system according to claim 17, wherein further a symbol assigned to an input signal is entered by a procedure of input including:

providing said input signal; and

providing a speech information corresponding to said symbol for selecting said symbol among the symbols that are assigned to said input signal, wherein said speech information is detected and analyzed based on at least one of a user's voice and a user's lip movements;

and wherein said data entry system uses at least one database of words such that in order to enter a word of said at least one database a user uses one of at least a first and a second methods of input wherein:

a first method of input includes combining information corresponding to said word, where said combined information includes

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a first information including entering at least one character such as a letter of said word through said procedure of input; and

a second information including providing the input signals corresponding to at least some of the other characters of said word without providing a speech;

a second method of input includes providing information including the input signals corresponding to substantially all of the characters of said word without providing a speech, wherein the system compares said information with the information corresponding to the words of said database and proposes a corresponding word.

22. The data entry system according to claim 17, wherein at least the letters having ambiguously resembling speech are separately from each other assigned to different symbols.

23. The data entry system according to claim 17, wherein substantially all of said letters are assigned to four of said input signals.

24. A data entry system comprising:

a number of predefined input signals provided by interacting with the input means of an object including predefined types of interaction provided with a number of keys such as physical or virtual keys, corresponding to an electronic device for at least entering arbitrary characters wherein,

said data entry system uses a number of symbols including at least the letters of the alphabet of at least one language and wherein said symbols are assigned to said input signals such that at least two of said letters are assigned to at least one of said input signals and wherein,

said data entry system uses a number of words wherein each of said words is composed of at least one of said symbols, wherein in order to enter one of said words a user provides at least the input signals corresponding to the symbols of said word and the system compares said sequence of input signals with the input signals corresponding to each of at least some of said words and proposes a corresponding word and wherein,

at least the input means to which said letters are assigned are split into two groups wherein each group is used by the finger of a different user's hand.

25. The data entry system according to claim 24, wherein at least the input means to which said letters are assigned are split into two groups and are disposed on opposite sides of an electronic device.

26. The data entry system according to claim 24, wherein further a symbol assigned to an input

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signal is entered by a procedure of input including:

providing said input signal; and

providing a speech information corresponding to said symbol for selecting said symbol among the symbols that are assigned to said input signal, wherein said speech information is detected and analyzed based on at least one of a user's voice and a user's lip movements.

27. The data entry system according to claim 24, wherein a further symbol assigned to an input signal is entered by a procedure of input including:

providing said input signal; and

providing a speech information corresponding to said symbol for selecting said symbol among the symbols that are assigned to said input signal, wherein said speech information is detected and analyzed based on at least one of a user's voice and a user's lip movements; and

wherein said data entry system uses at least one database of words such that in order to enter a word of said a least one database a user uses one of at least a first and a second methods of input, wherein:

a first method of input includes combining information corresponding to said word, wherein said combined information includes:

a first information including entering at least one character such as a letter of said word through said procedure of input; and

a second information including providing the input signals corresponding to at least some of the other characters of said word without providing speech;

a second method o input includes providing information including the input signals corresponding to substantially all of the characters of said word without providing a speech, wherein the system compares said information with the information corresponding to the words of said database and proposes a corresponding word.

28. The data entry system according to claim 24, wherein at least the letters having ambiguously resembling speech are separately from each other assigned to different input signals.

29. The data entry system according to claim 24, wherein substantially all of said letters are assigned to four of said input signals.

30. A data entry system comprising;

a number of predefined input signals provided by interacting with the input means of an object, including predefined types of interaction provided with a number of keys, such as physical or virtual keys,

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corresponding to an electronic device for at least entering arbitrary characters wherein,

said data entry system uses a first type of text components including at least the letters of the alphabet of at least one language and a second type of text components generally each including a portion of a word, such as a chain of characters generally corresponding to a syllable of a word of a language, wherein said first text components are assigned to said input signals such that at least two of said letters are assigned to at least one of said input signals, and wherein a text component of the second group of text components is entered by a procedure of input including:

providing the input signals corresponding to at least two of its characters; and

providing a speech information corresponding to said text component for selecting said text component among the text components that are represented by said provided input signals, wherein said speech information is detected and analyzed based on at least one of a user's voice and a user's lip movements.

31. The data entry system according to claim 30, wherein said second group of text components include the word of a language having one syllable.

32. The data entry system according to claim 30, wherein said second group of text components includes portions of a word, where said portions of a word have more than one syllable.

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ABSTRACT

A data input system having a keypad defining a plurality of keys, each key contains at least one symbol of a group of symbols. The group of symbols is divided into subgroups each having at least one of alphabetical symbols, numeric symbols, and command symbols, where each subgroup is associated with at least a portion of a user's finger. A finger recognition system is in communication with at least one key, where the key has at least a first symbol from a first subgroup and at least a second symbol from a second subgroup, The finger recognition system is configured to recognize the portion of the user's finger when the finger interacts with the key so as to select the symbol on the key, corresponding to the subgroup associated with the portion of the user's finger.



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(74) Agent: SOFER, Joseph; Sofer & Haroun, LLP, 317 Madison Avenue, Suite 910, New York, NY 10017 (US).

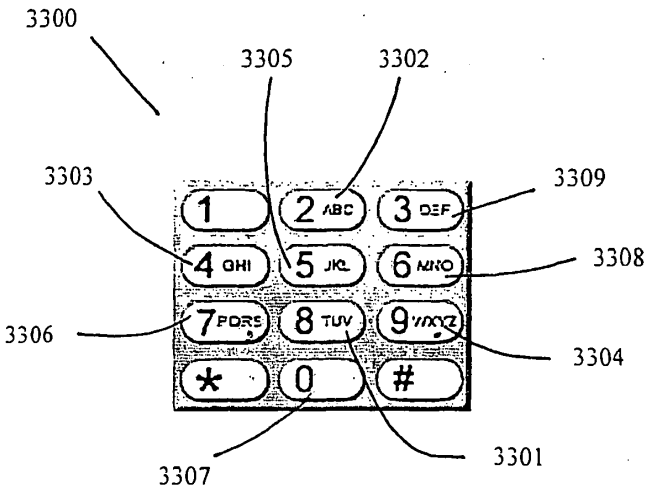
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(54) Title: SYSTEMS TO ENHANCE DATA ENTRY IN MOBILE AND FIXED ENVIRONMENT



(57) Abstract: A data input system having a keypad defining a plurality of keys, each key contains at least one symbol of a group of symbols. The group of symbols is divided into subgroups each having at least one of alphabetical symbols, numeric symbols, and command symbols, where each subgroup is associated with at least a portion of a user's finger. A finger recognition system is in communication with at least one key, where the key has at least a first symbol from a first subgroup and at least a second symbol from a second subgroup, The finger recognition system is configured to recognize the portion of the user's finger when the finger interacts with the key so as to select the symbol on the key, corresponding to the subgroup associated with the portion of the user's finger.

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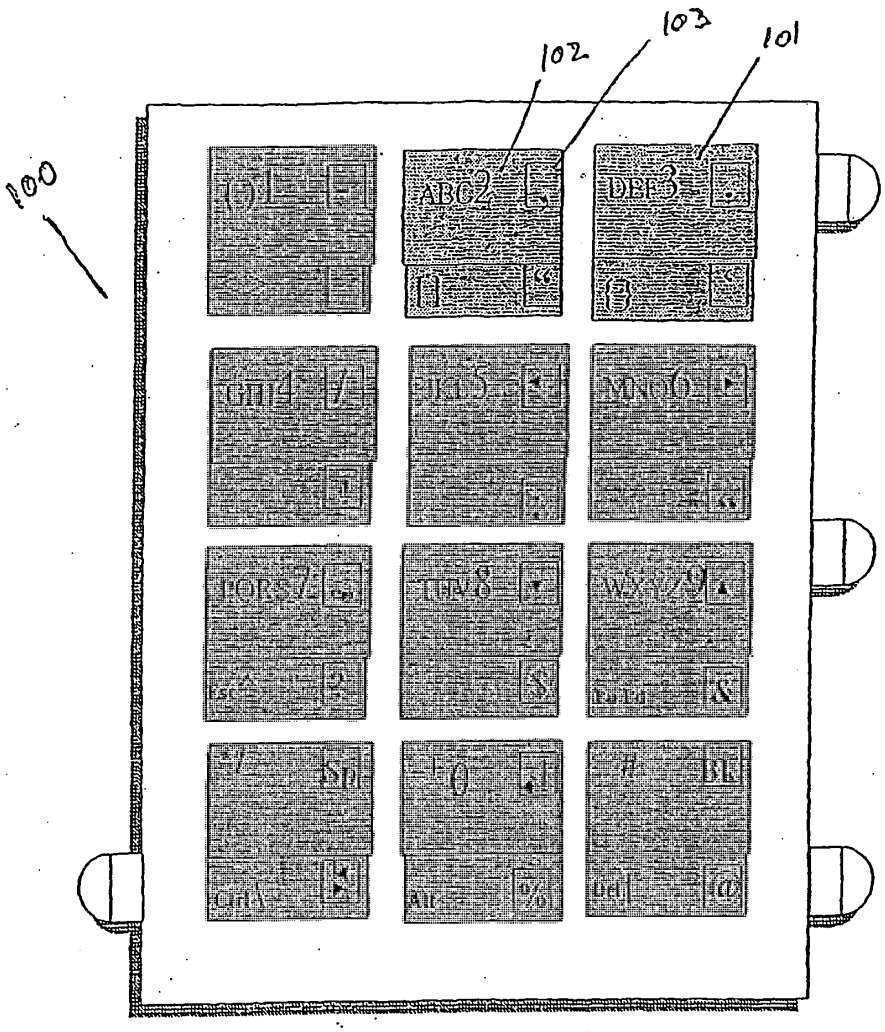


Fig. 1

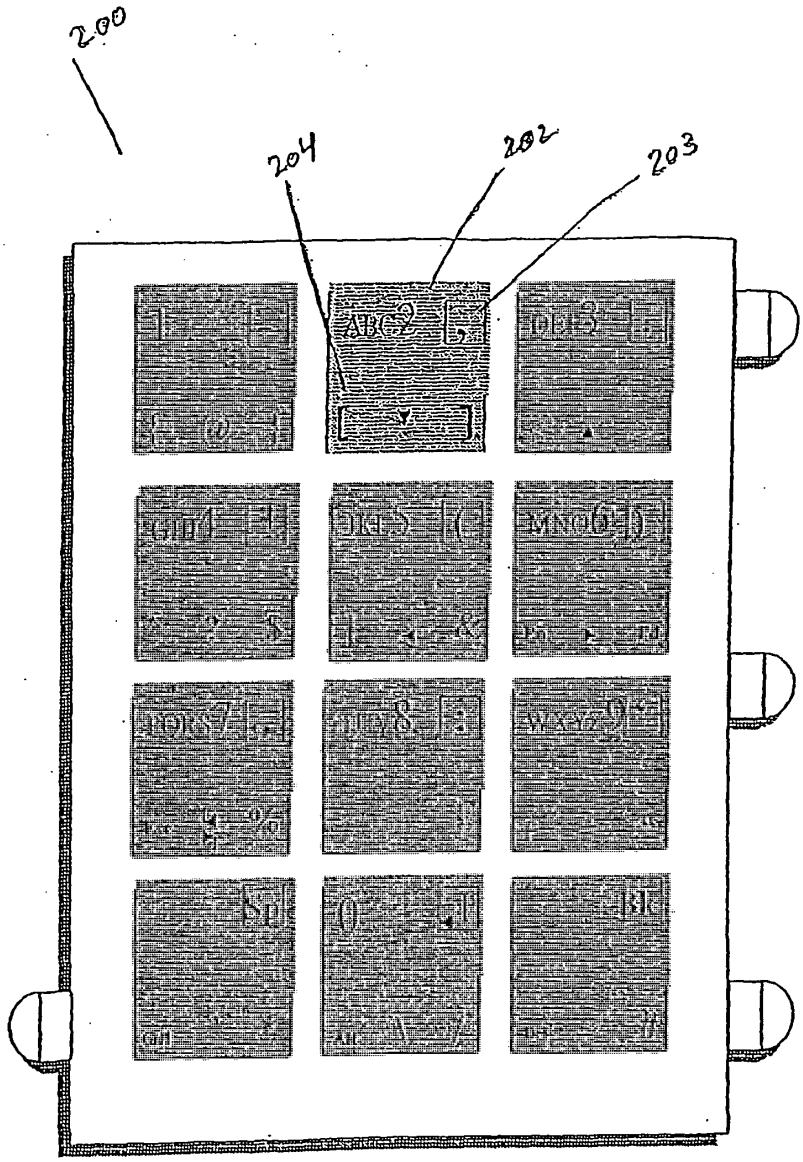


Fig. 2

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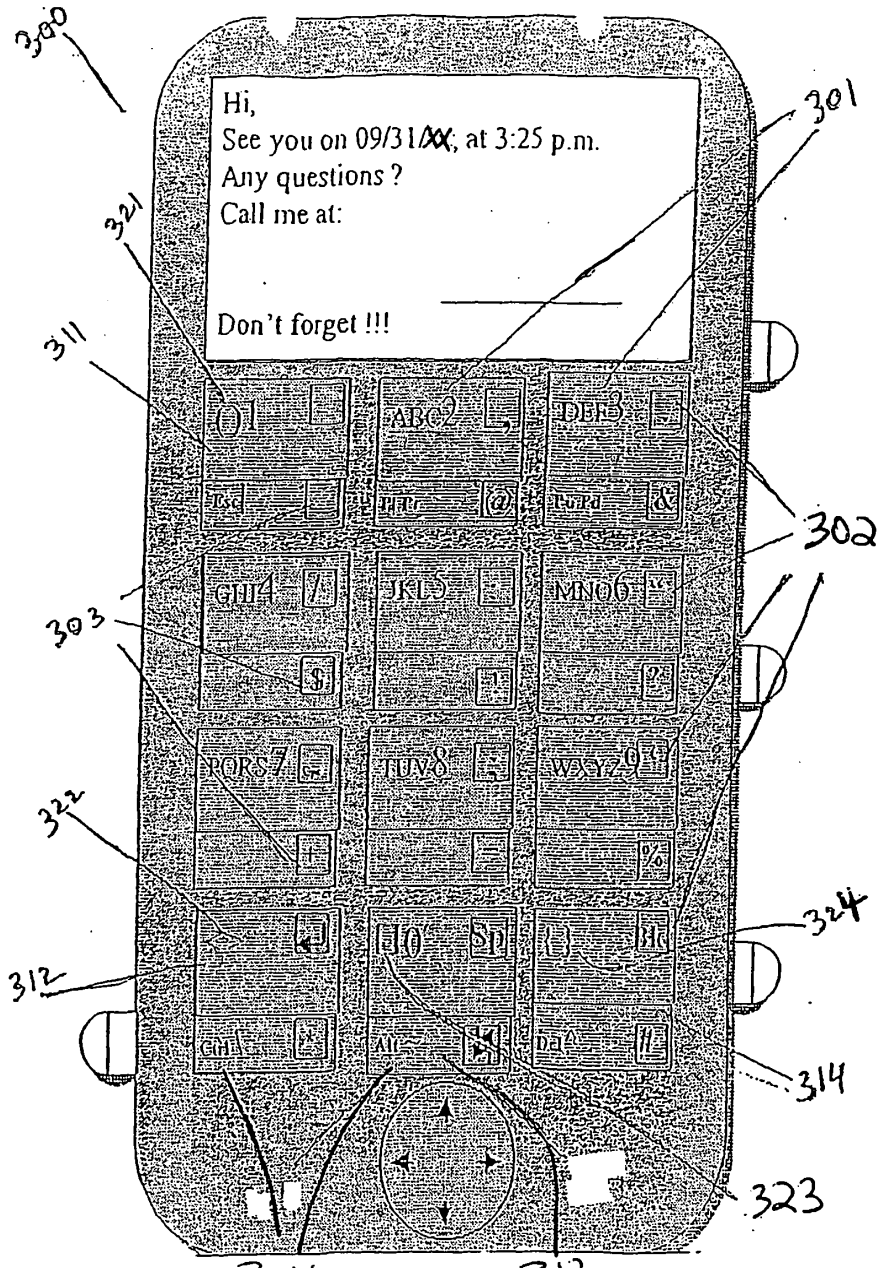


Fig. 3

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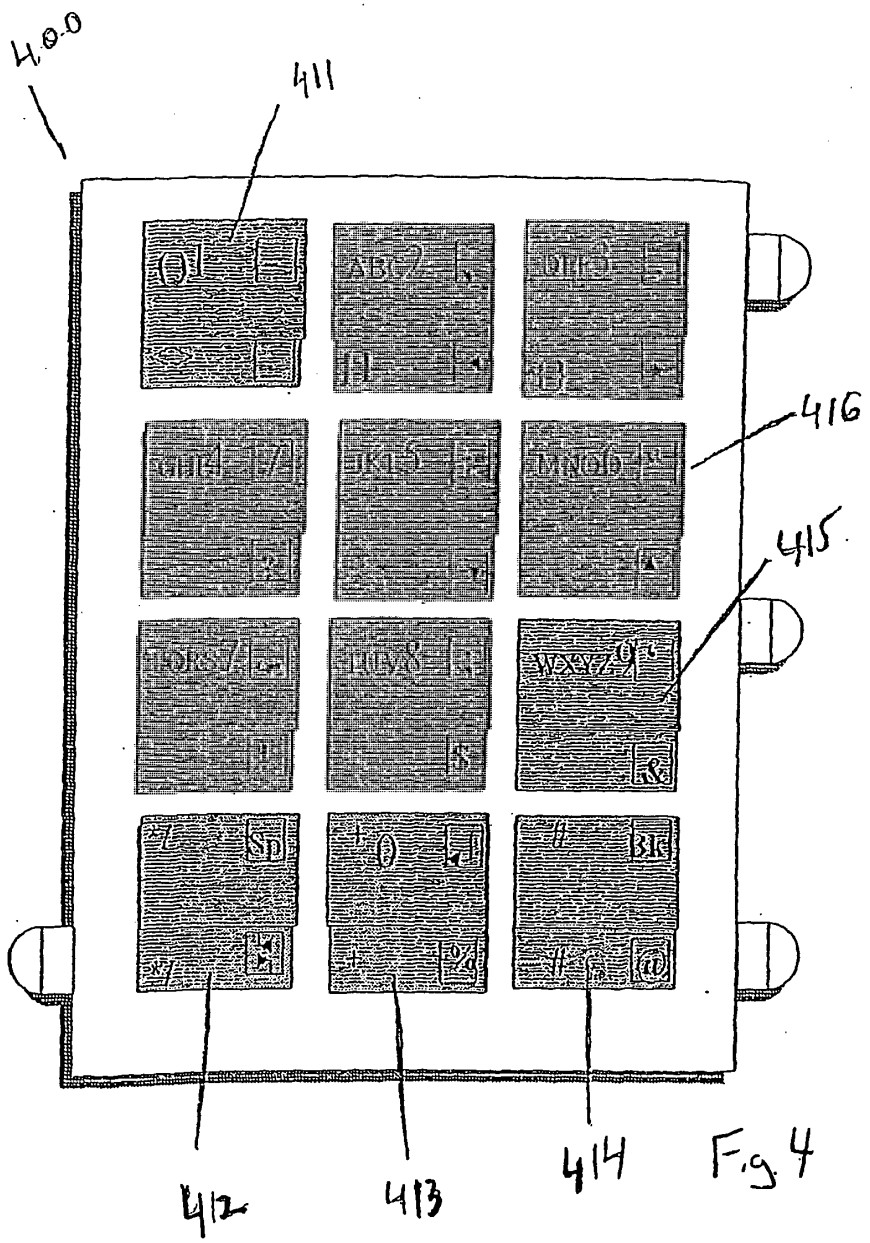


Fig. 4

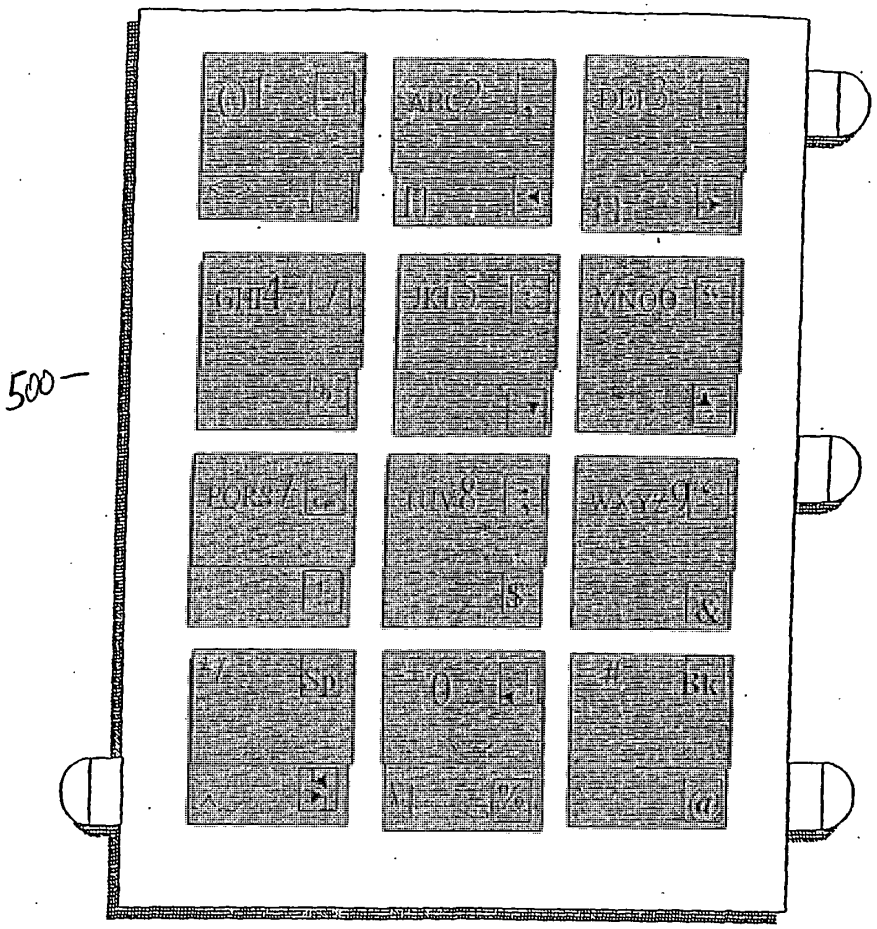
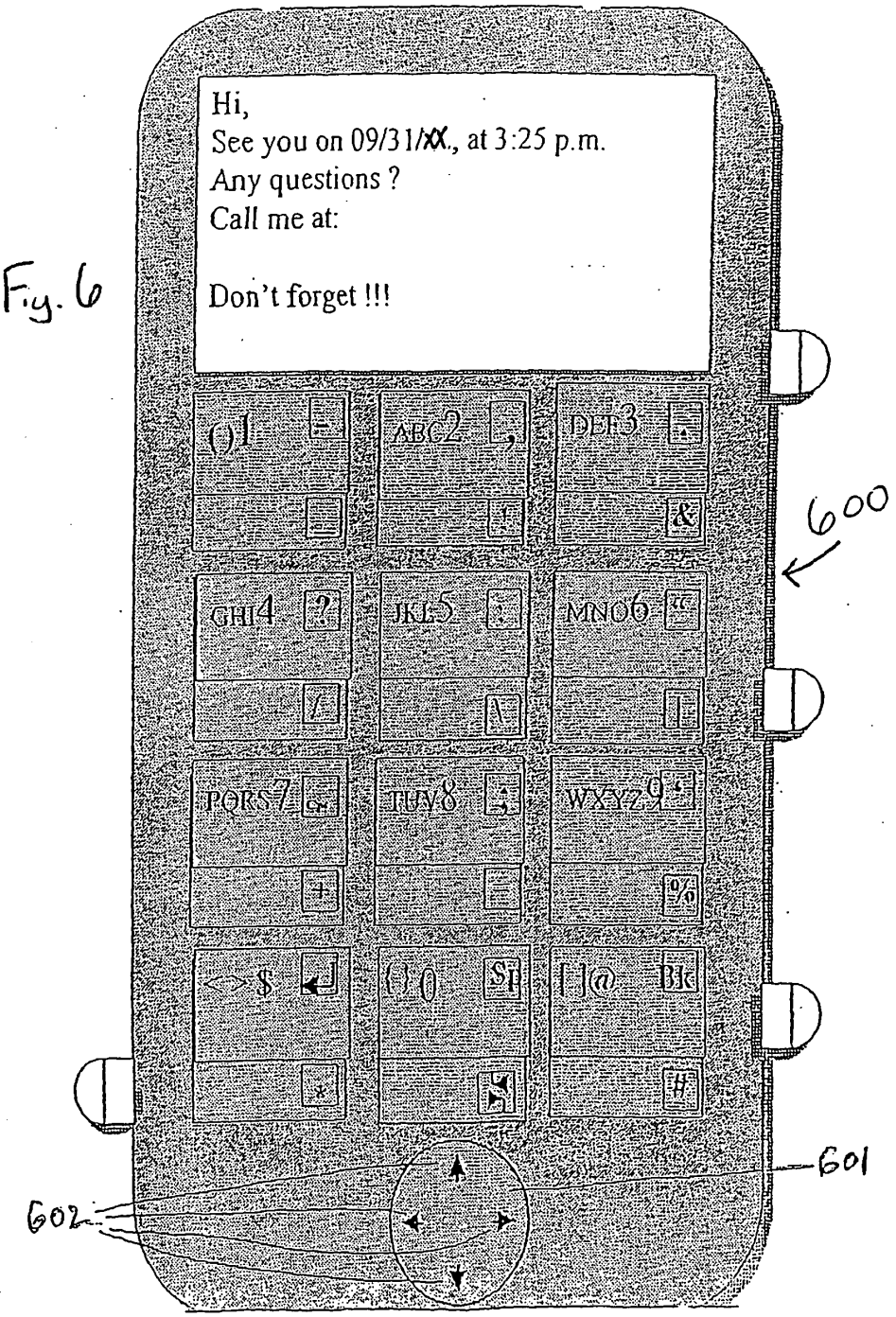


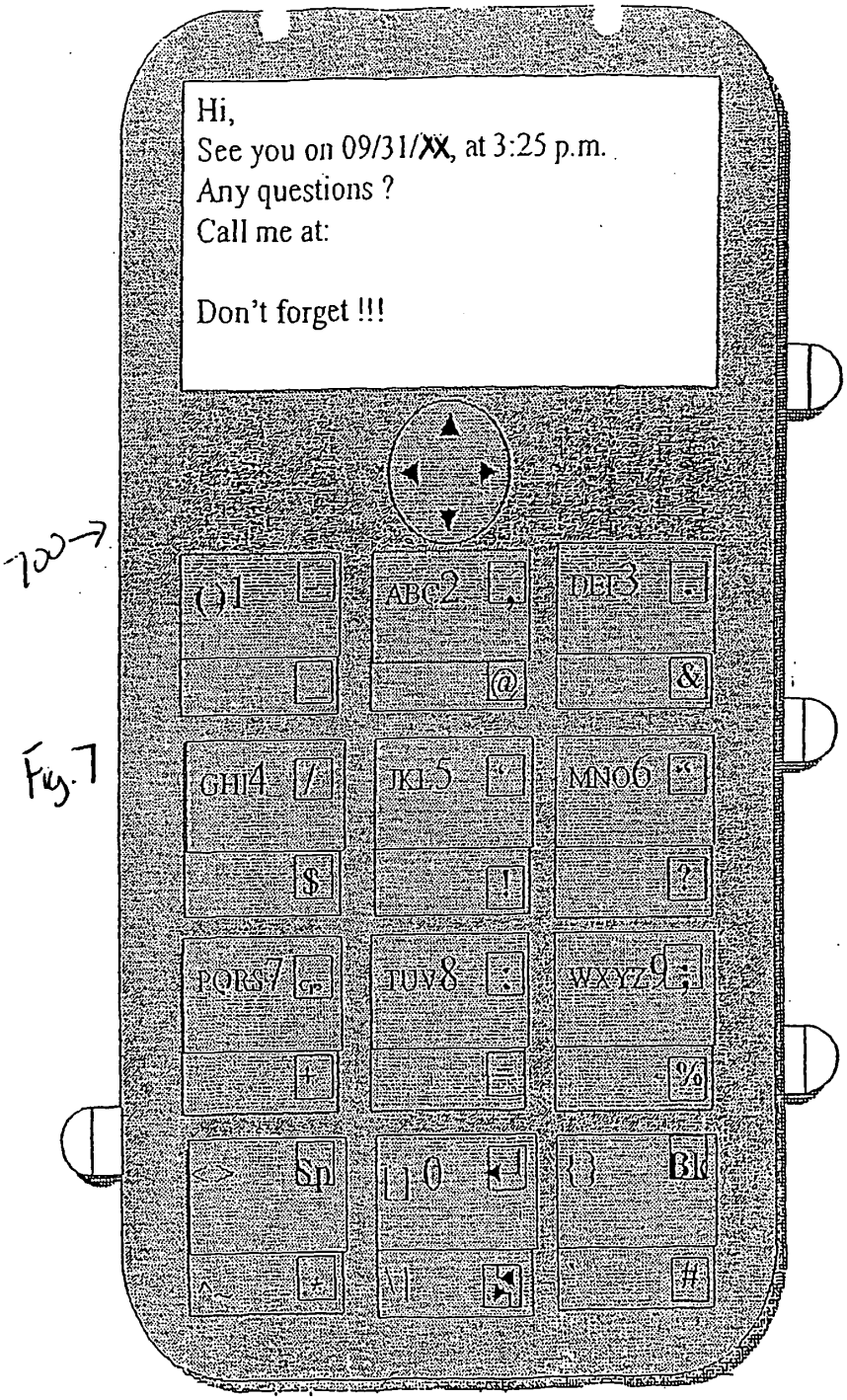
Fig. 5

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Fig. 6



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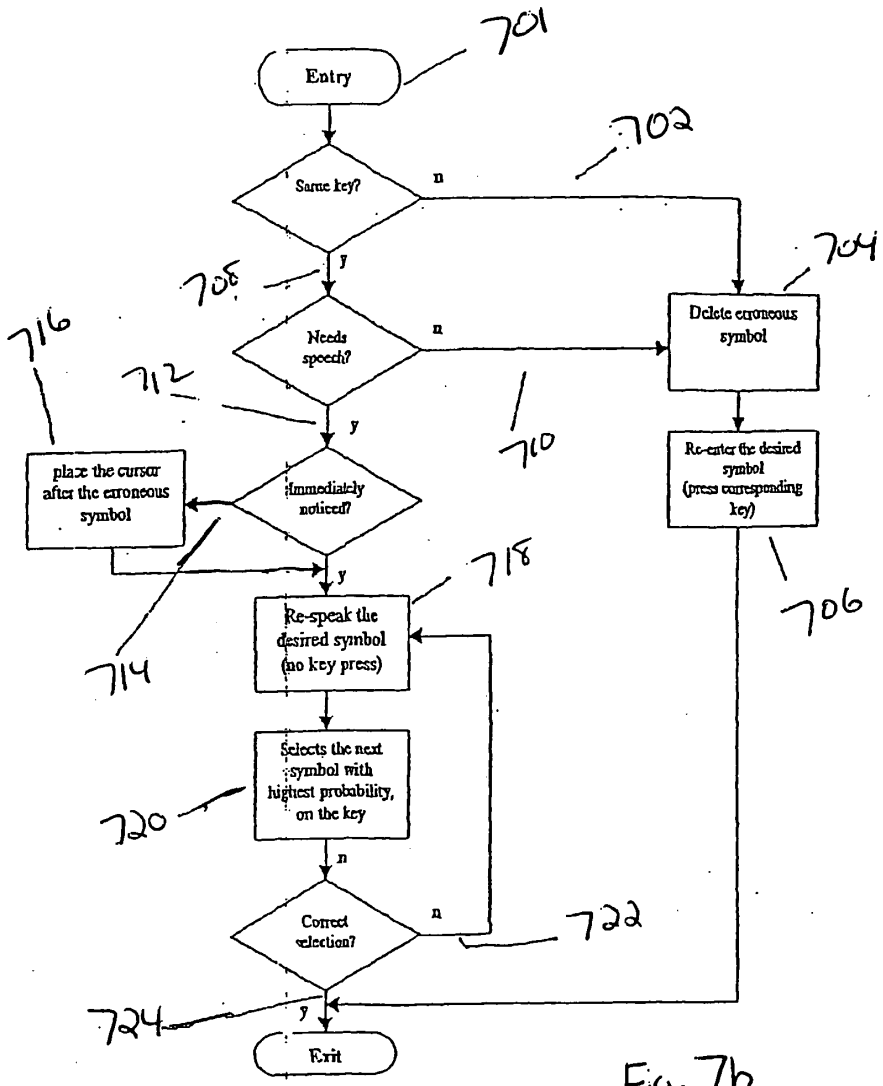


Fig. 7b

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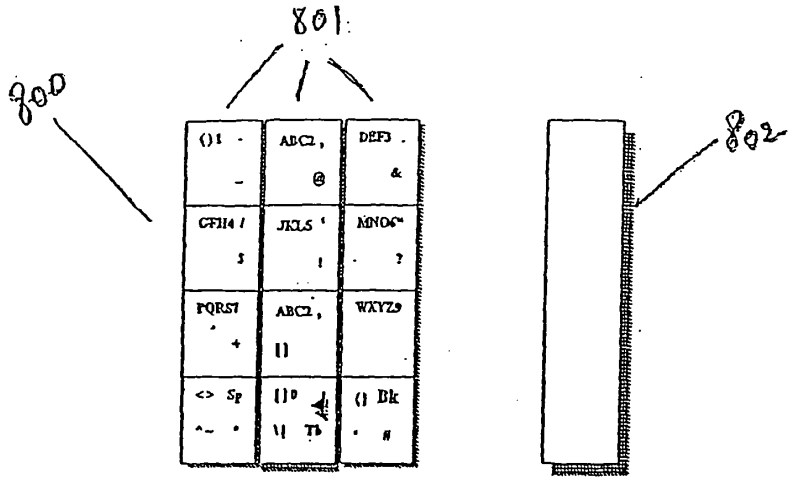


Fig. 8

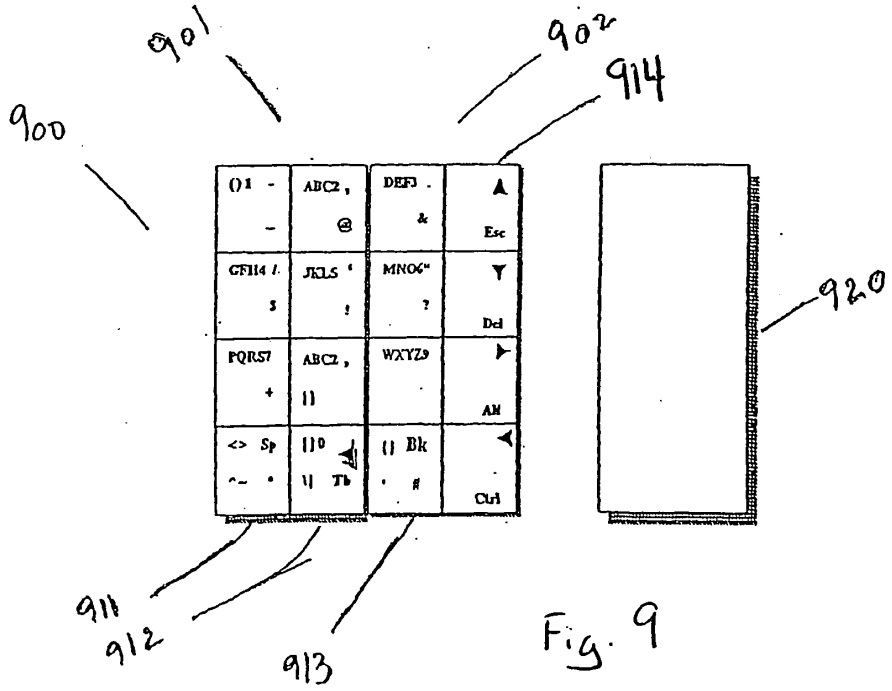


Fig. 9

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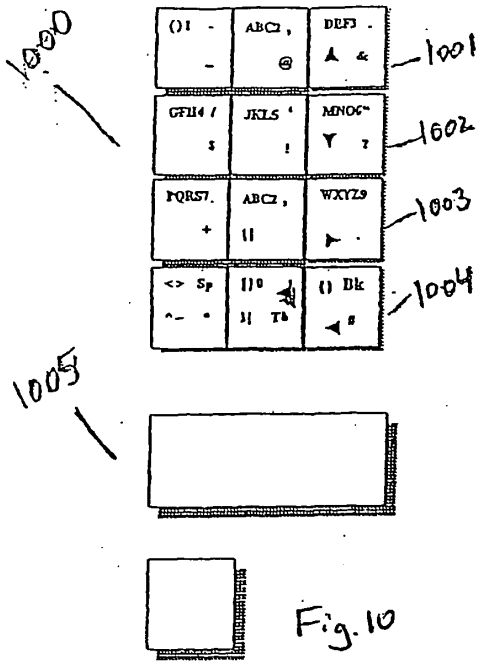


Fig. 10

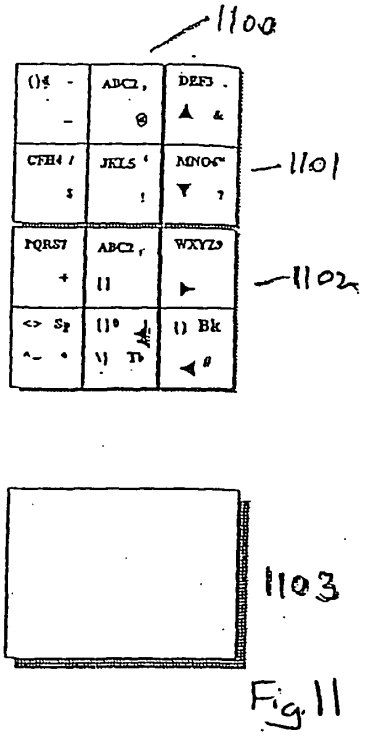


Fig. 11

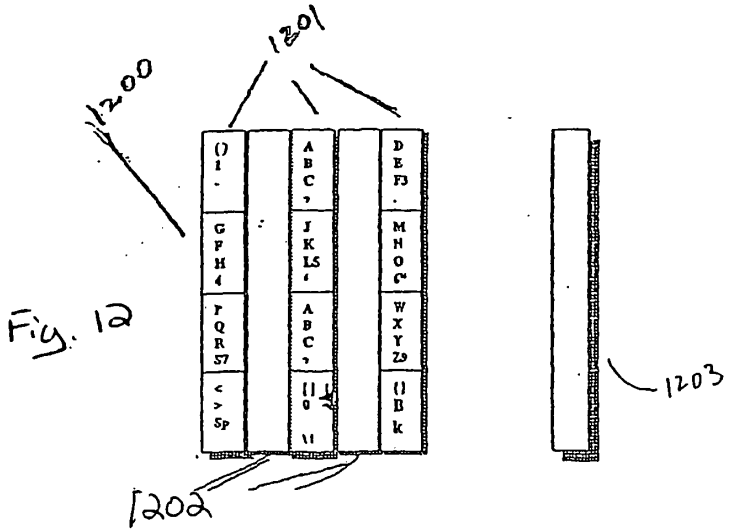


Fig. 12

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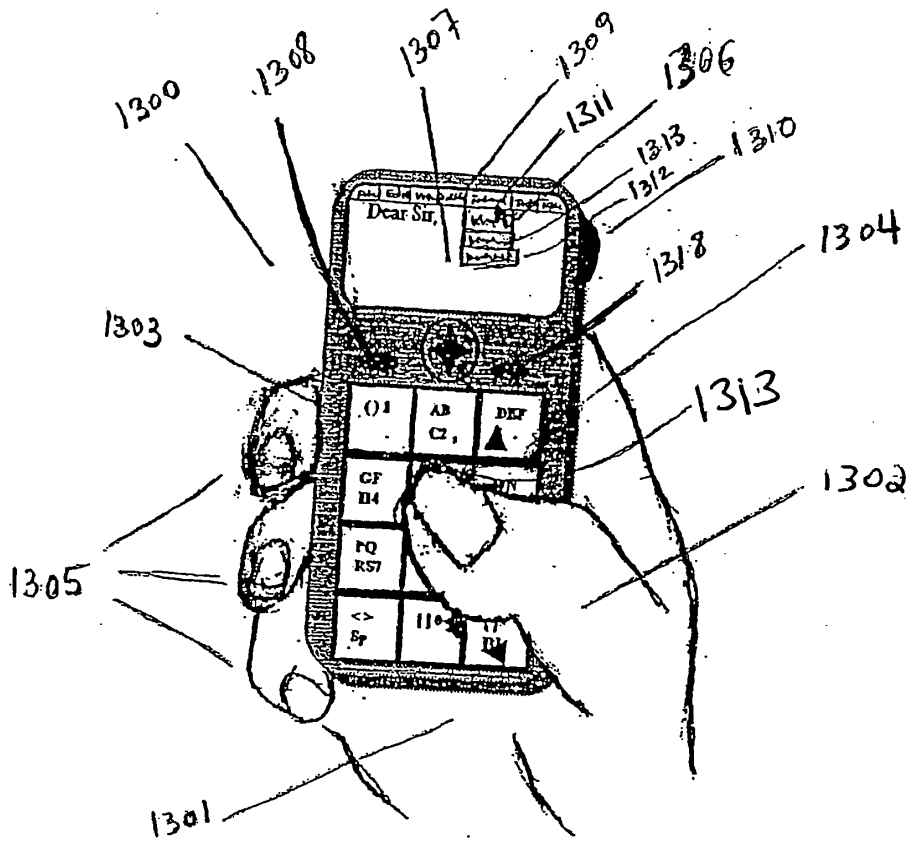

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Fig. 13

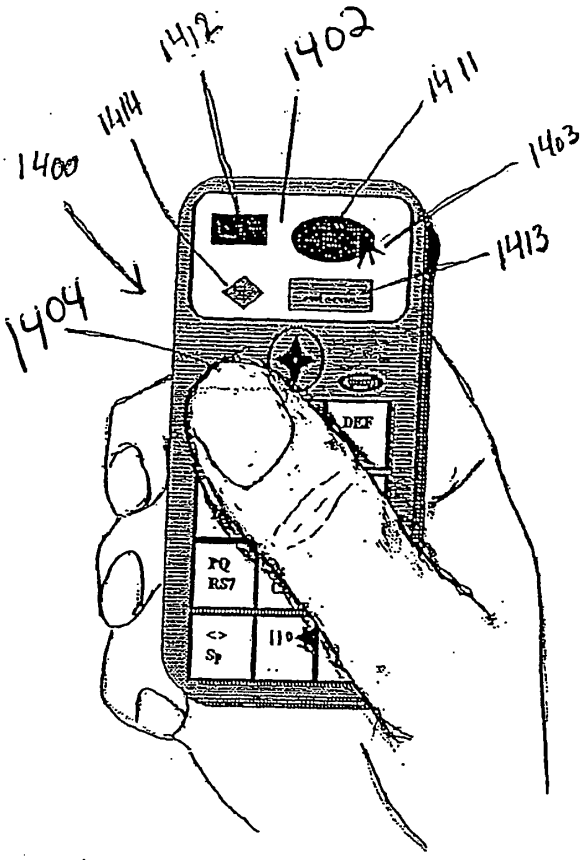


Fig. 14

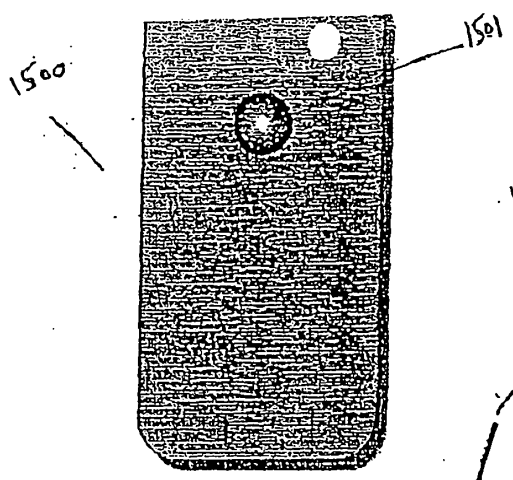


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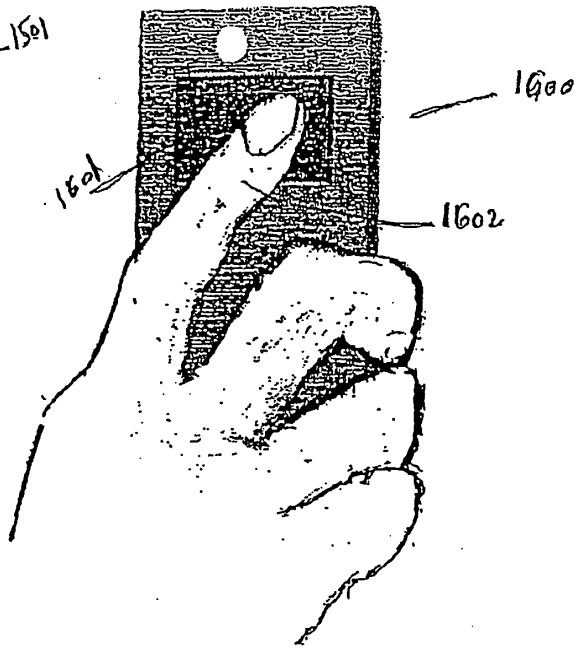


Fig. 16

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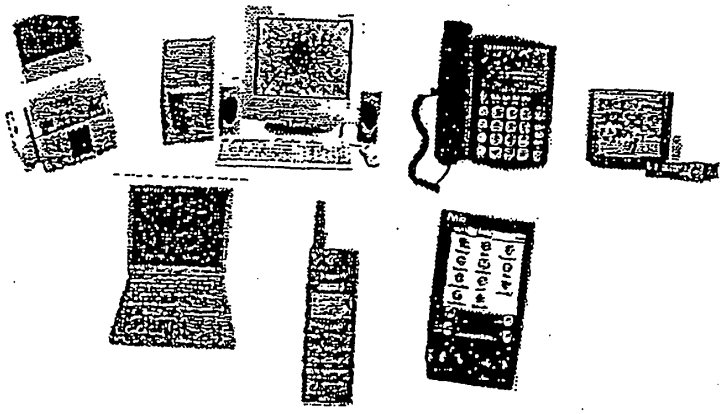


Fig. 17

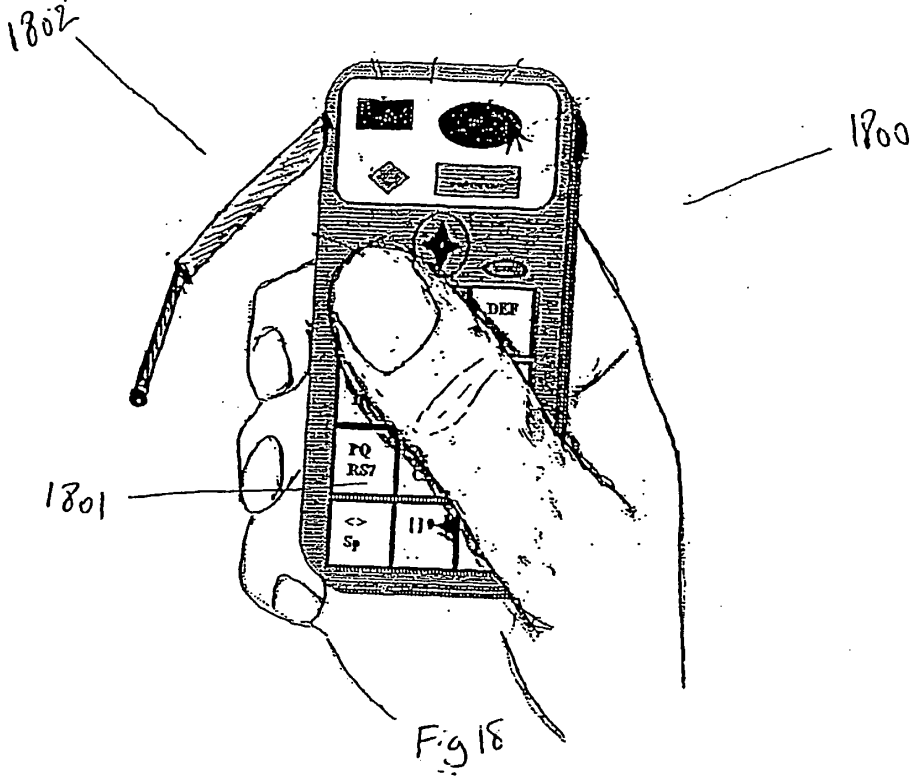


Fig 18

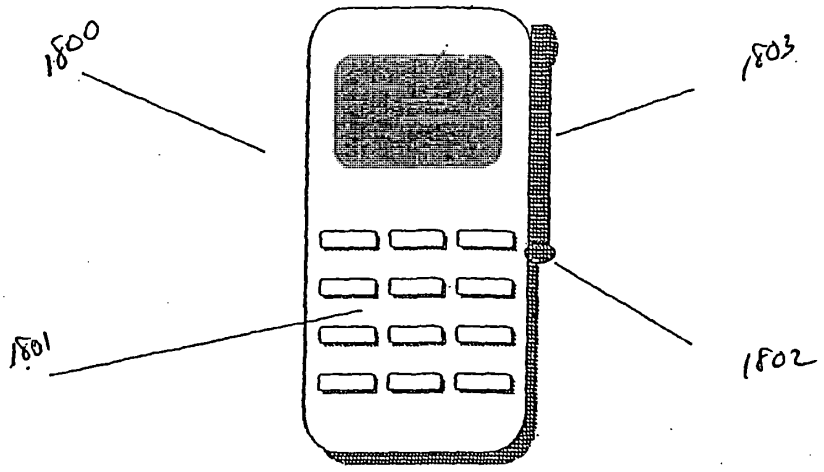


Fig. 18B

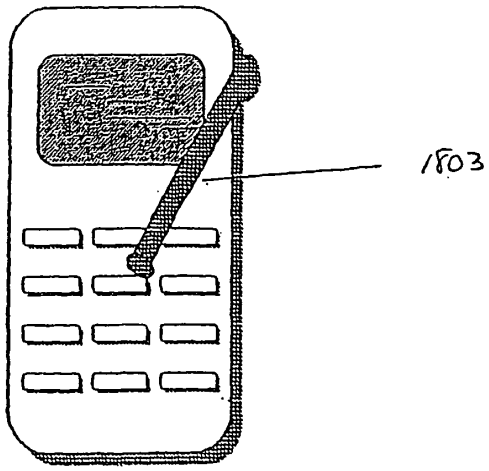


Fig. 18C

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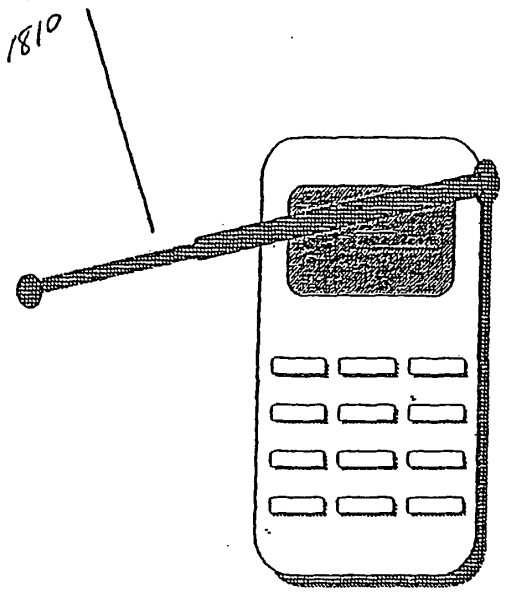


Fig 18D

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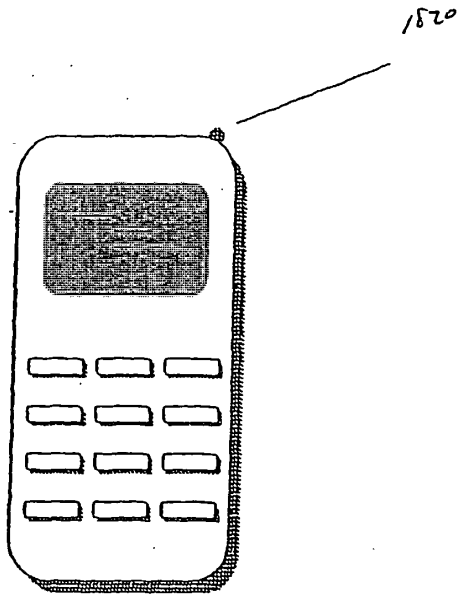


Fig 18E

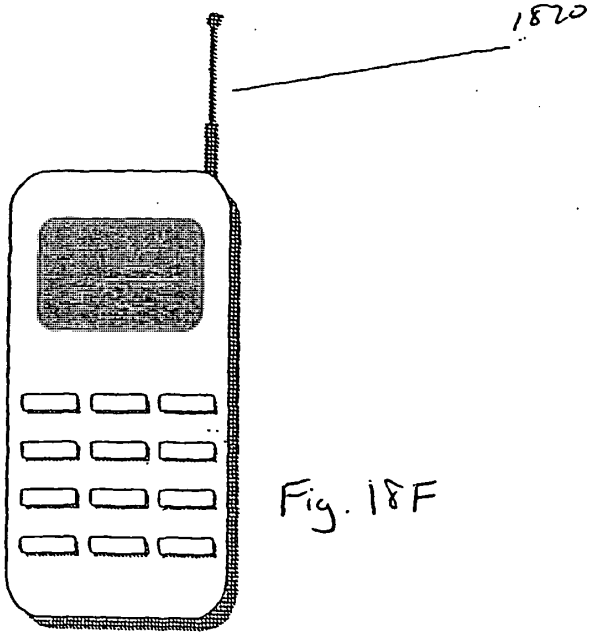


Fig. 18F

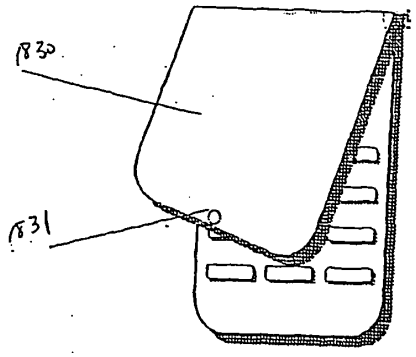


Fig. 18G

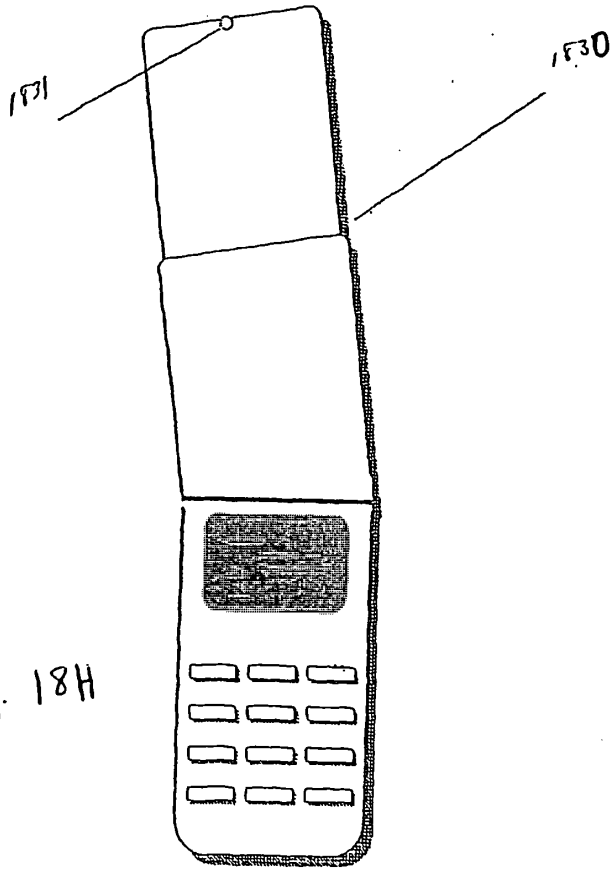


Fig. 18H

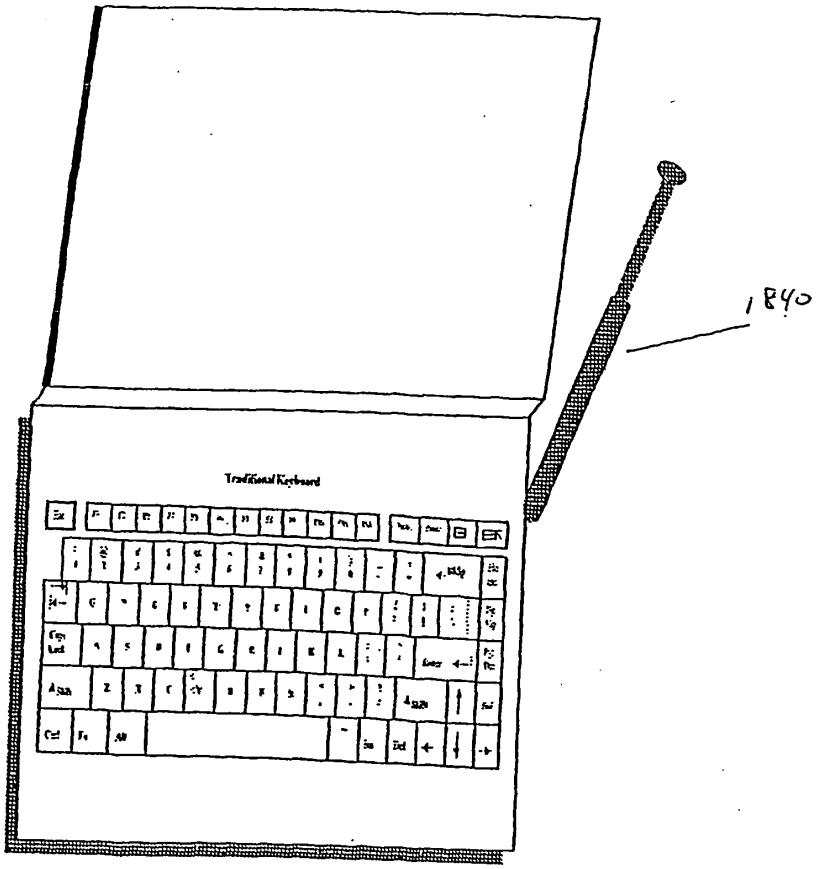


Fig. 18I

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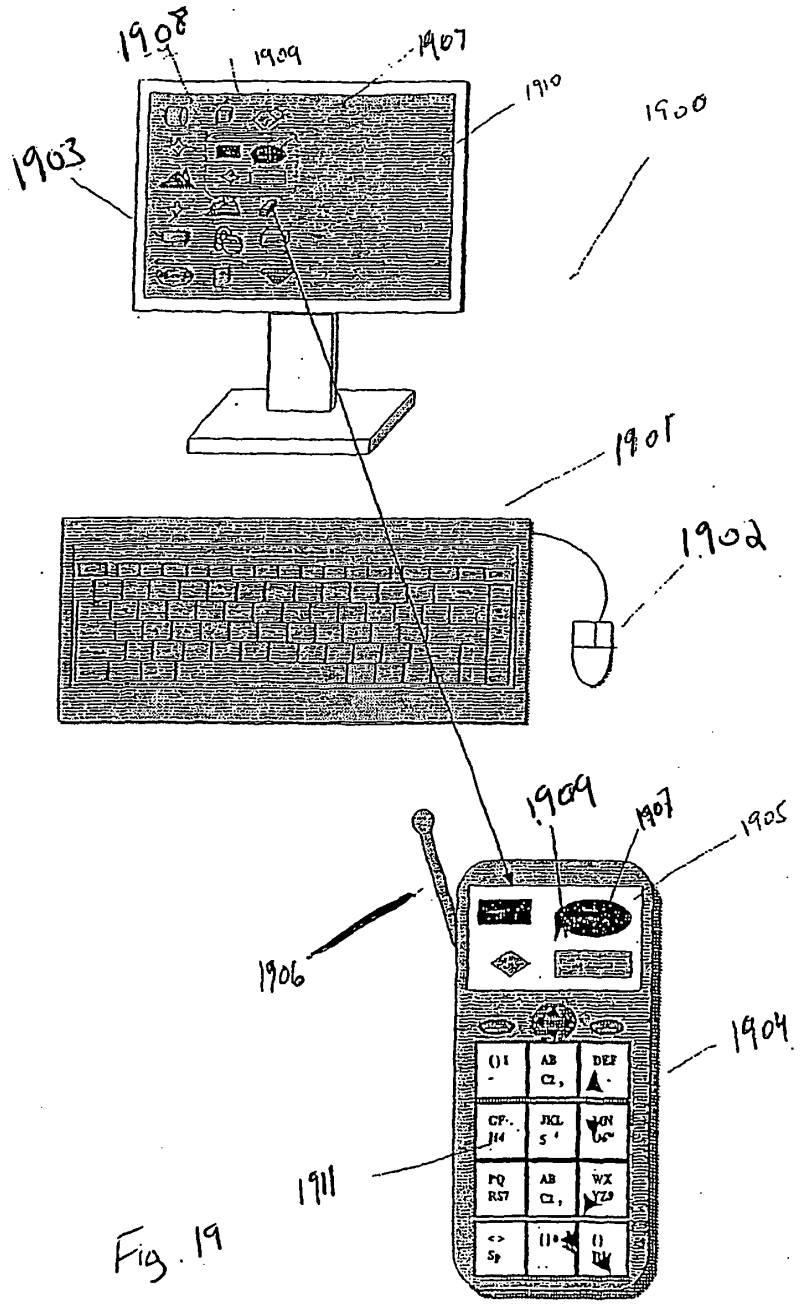


Fig. 19

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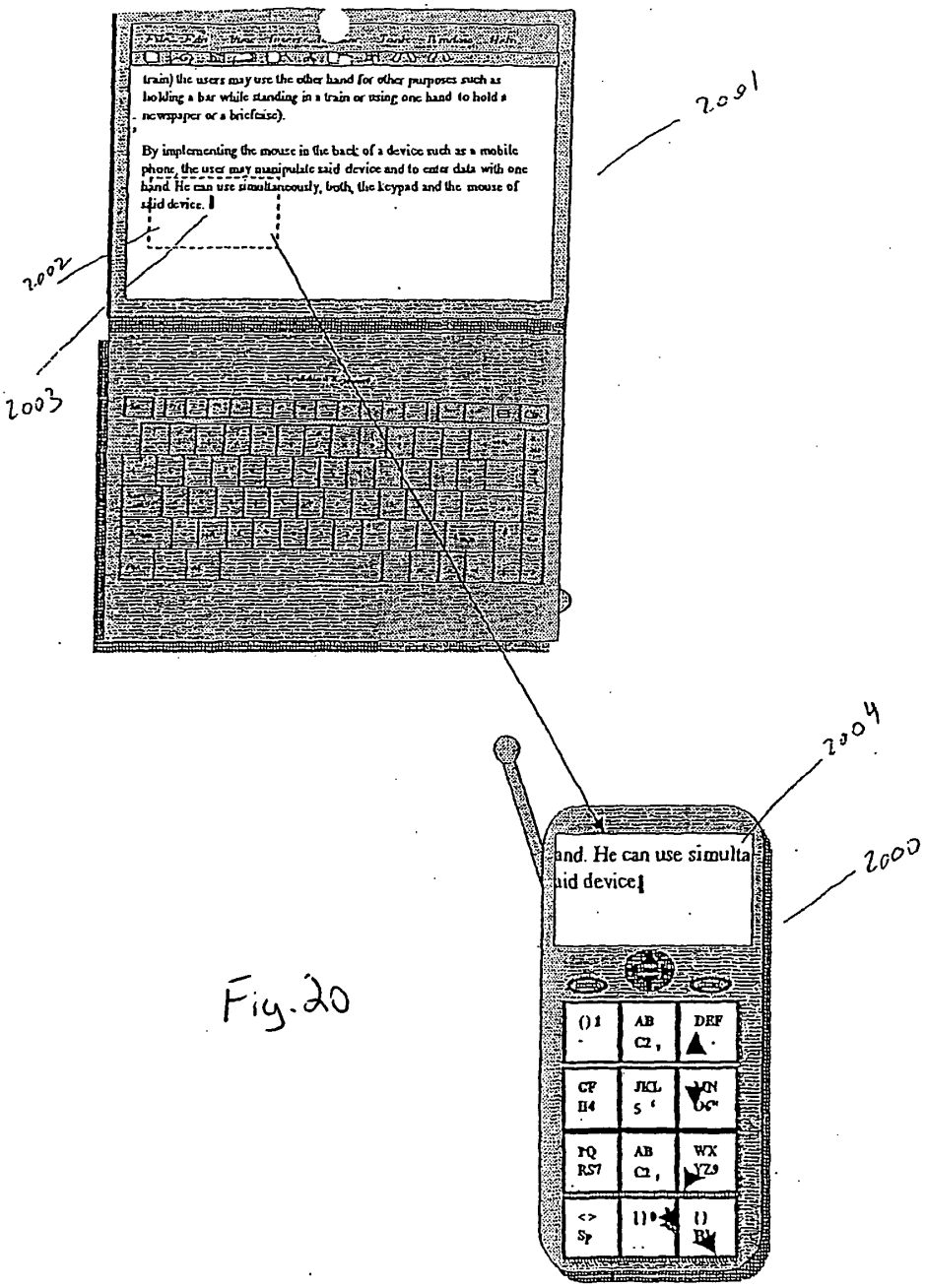


Fig. 20

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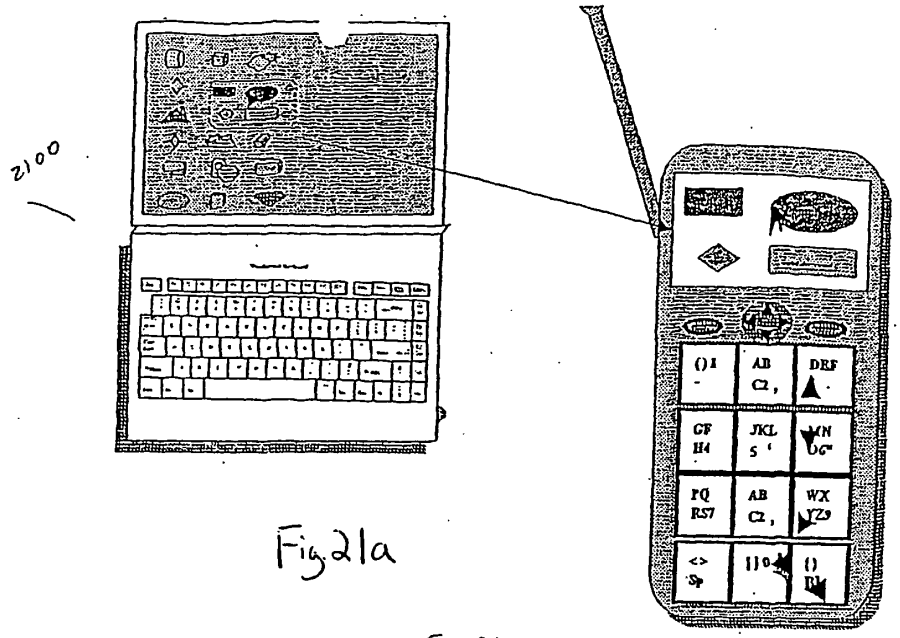


Fig 21a

Fig 21a

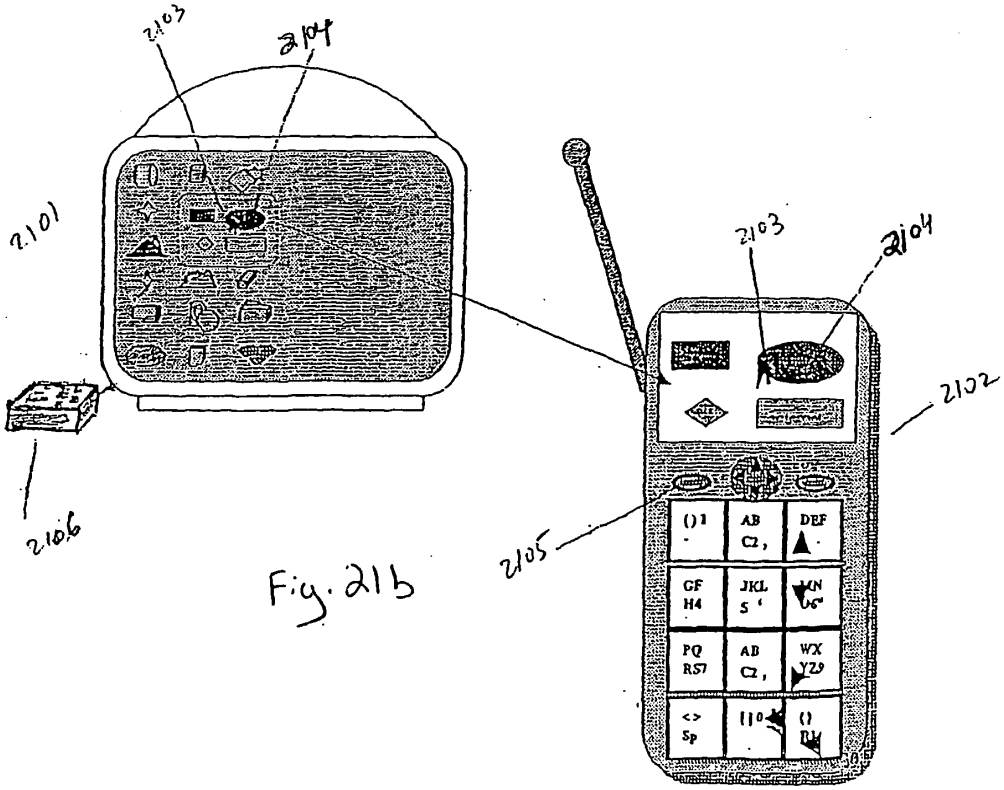


Fig. 21b

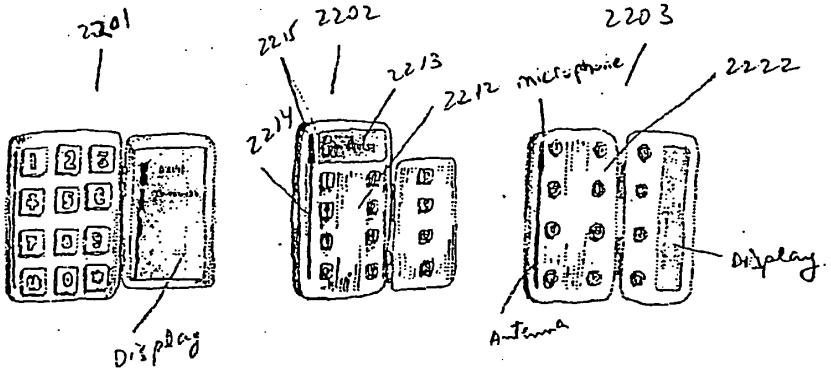


Fig. 22a

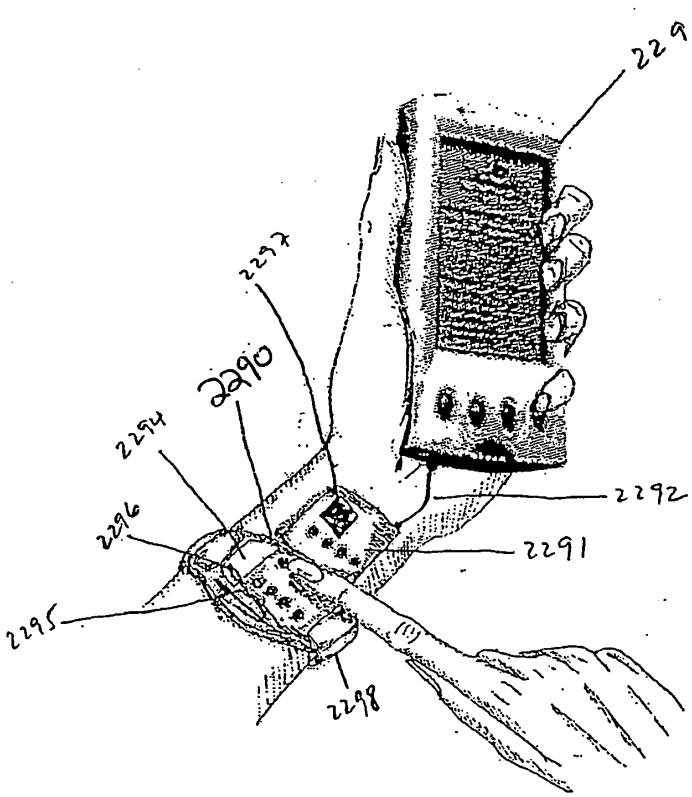


Fig. 22b

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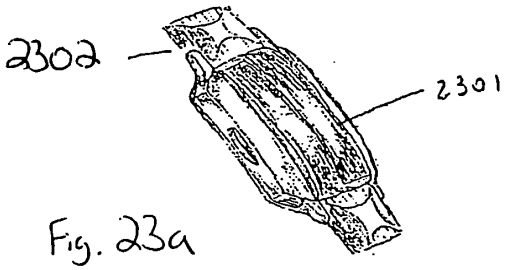


Fig. 23a

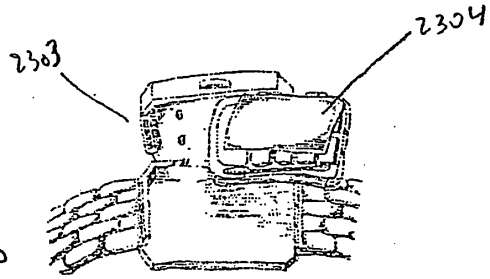


Fig. 23b

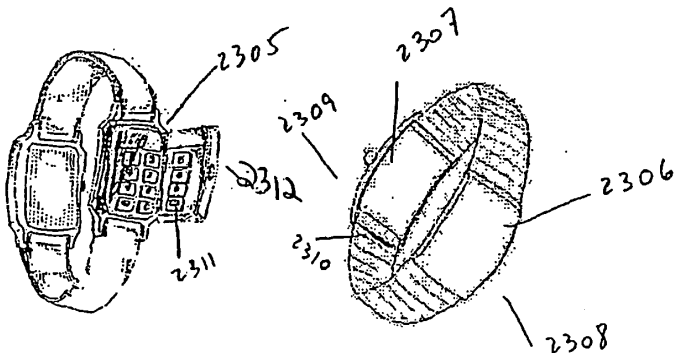


Fig. 23c

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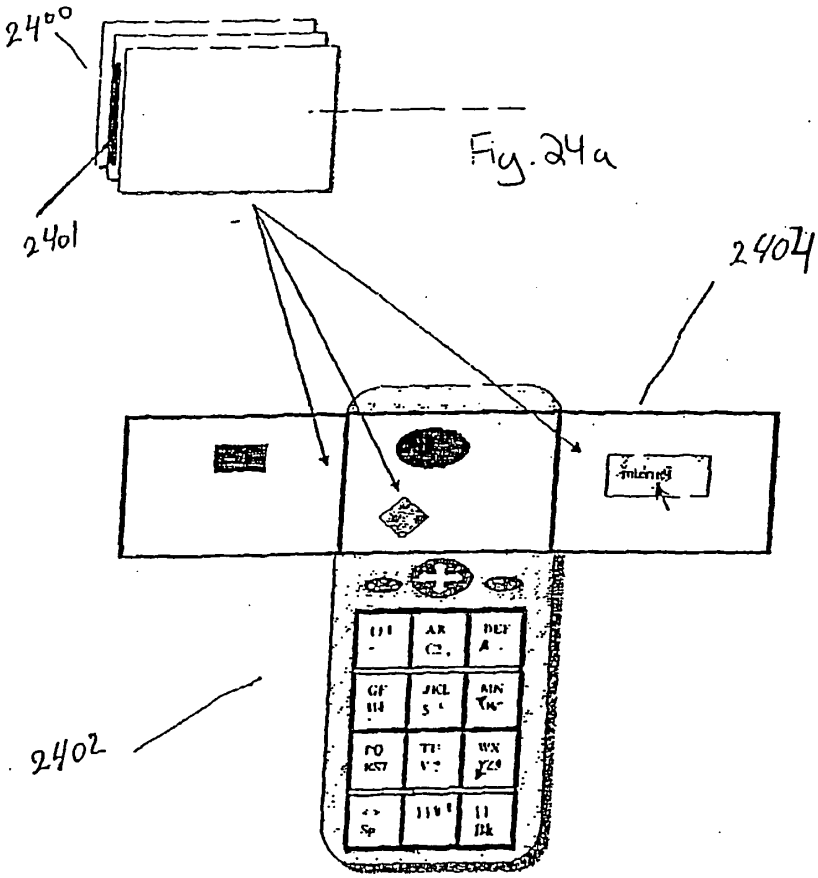


Fig. 24a

Fig. 24b

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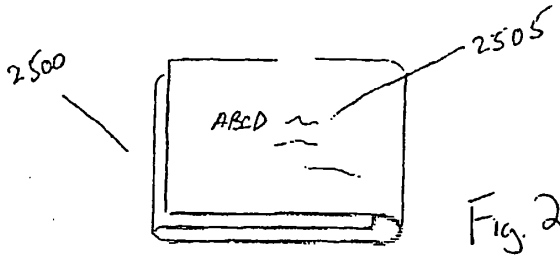


Fig. 25a

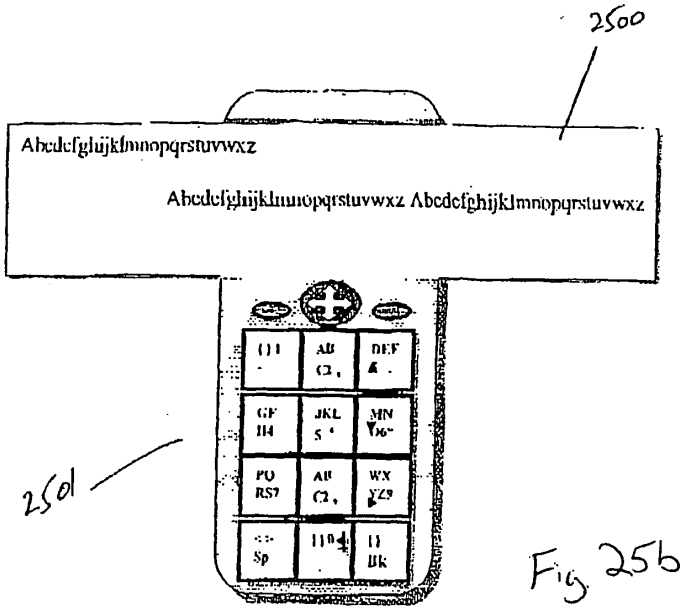


Fig. 25b

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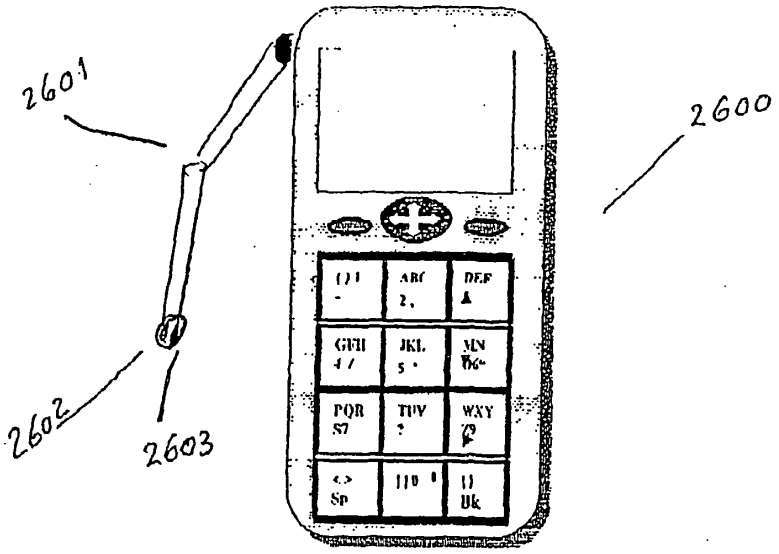


Fig. 26

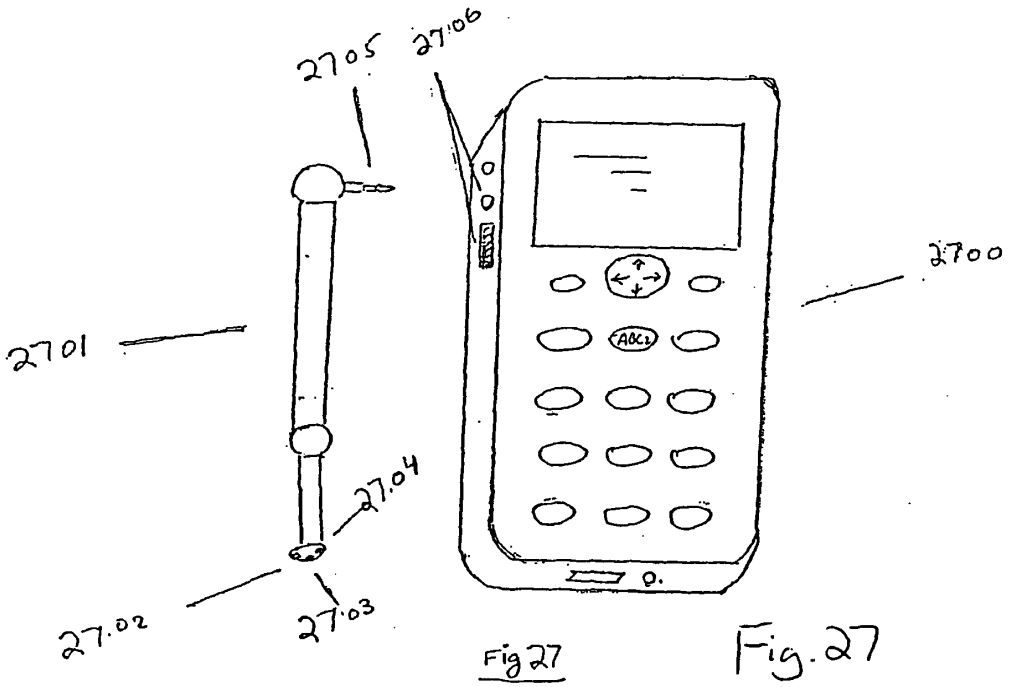


Fig 27

Fig. 27

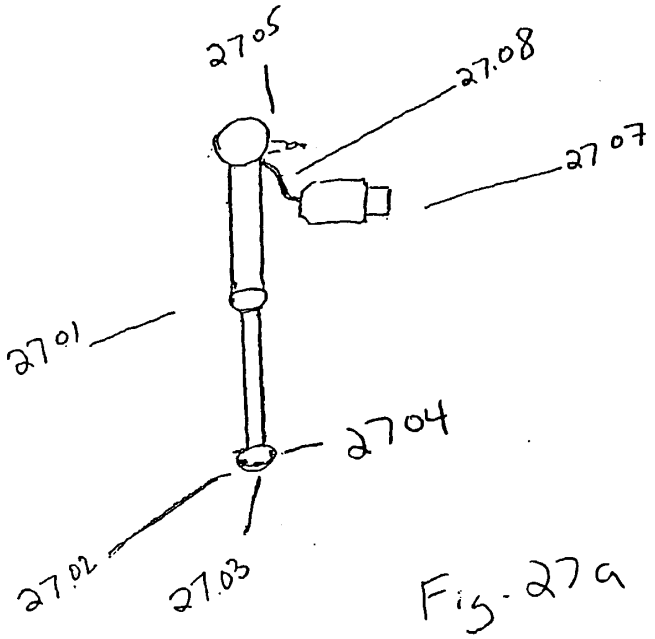


Fig. 27a

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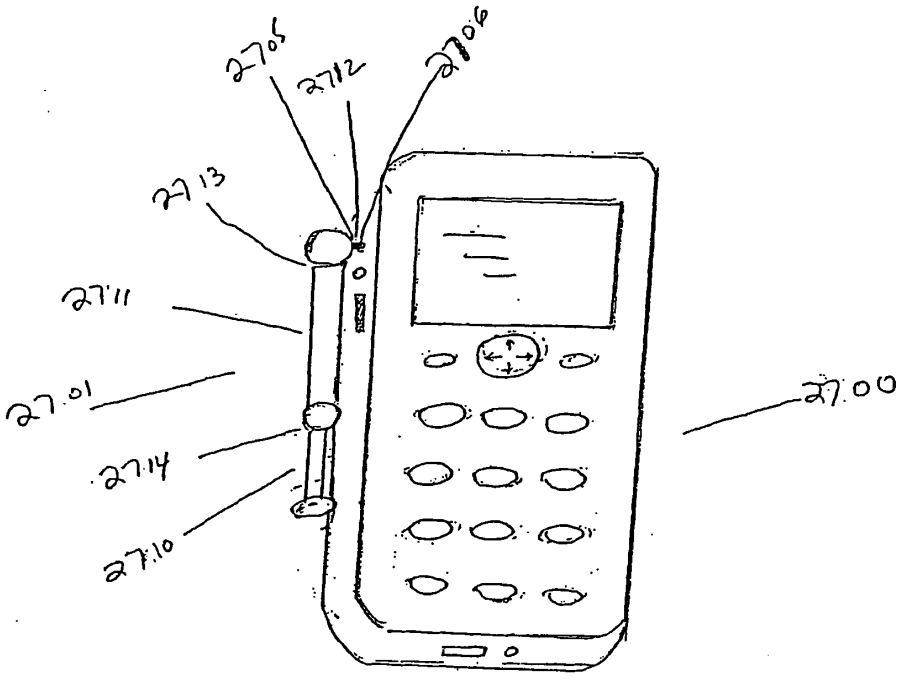


Fig 27b

Fig 27b

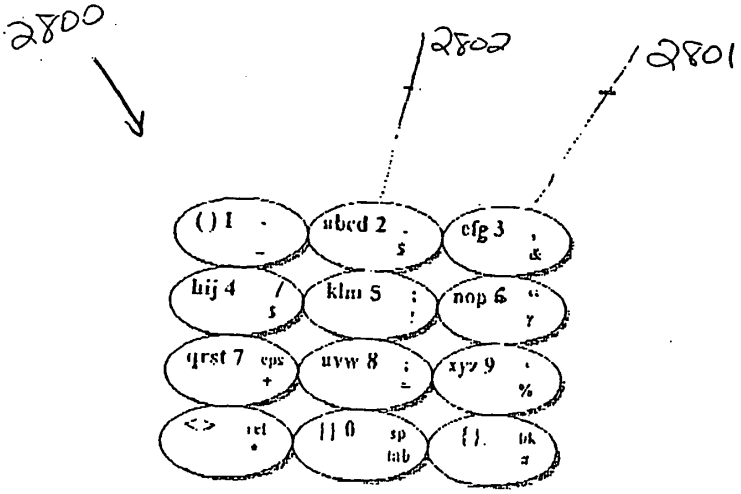


Fig. 28

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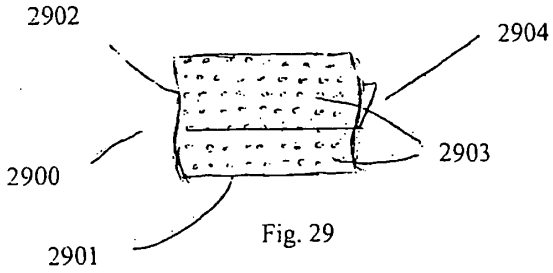
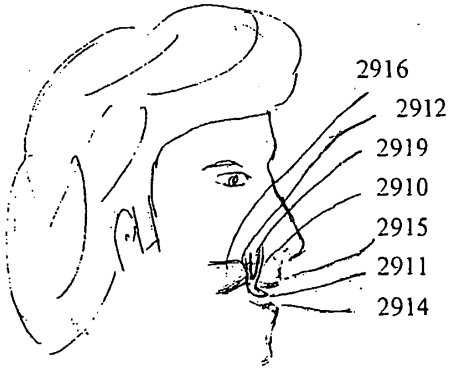


Fig. 29



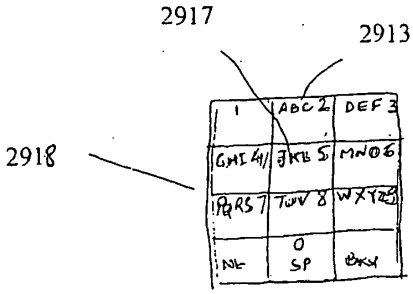


Fig. 29a

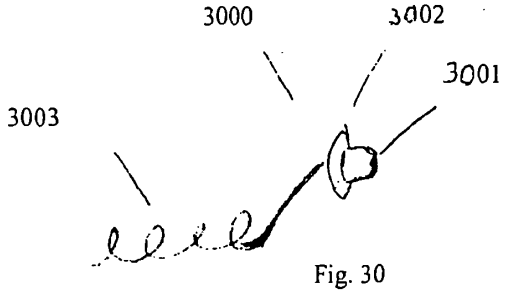


Fig. 30

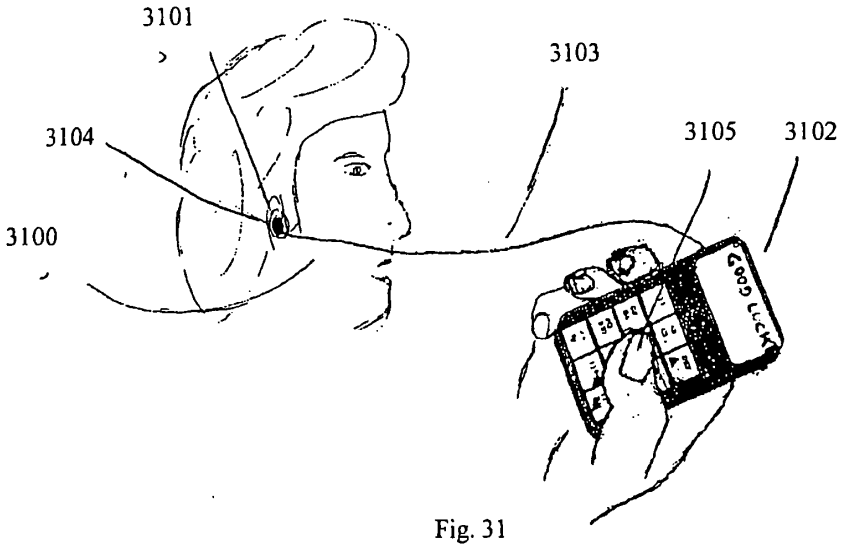


Fig. 31

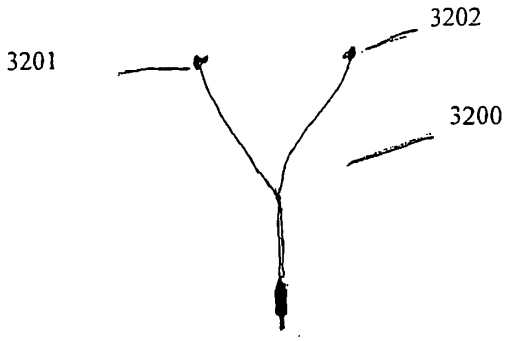


Fig. 32

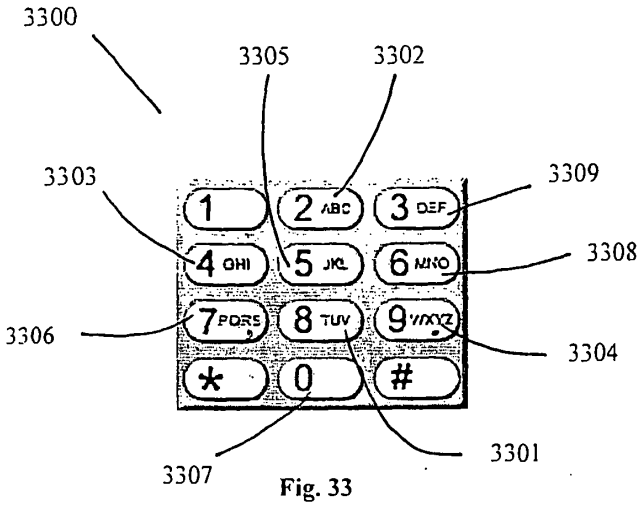
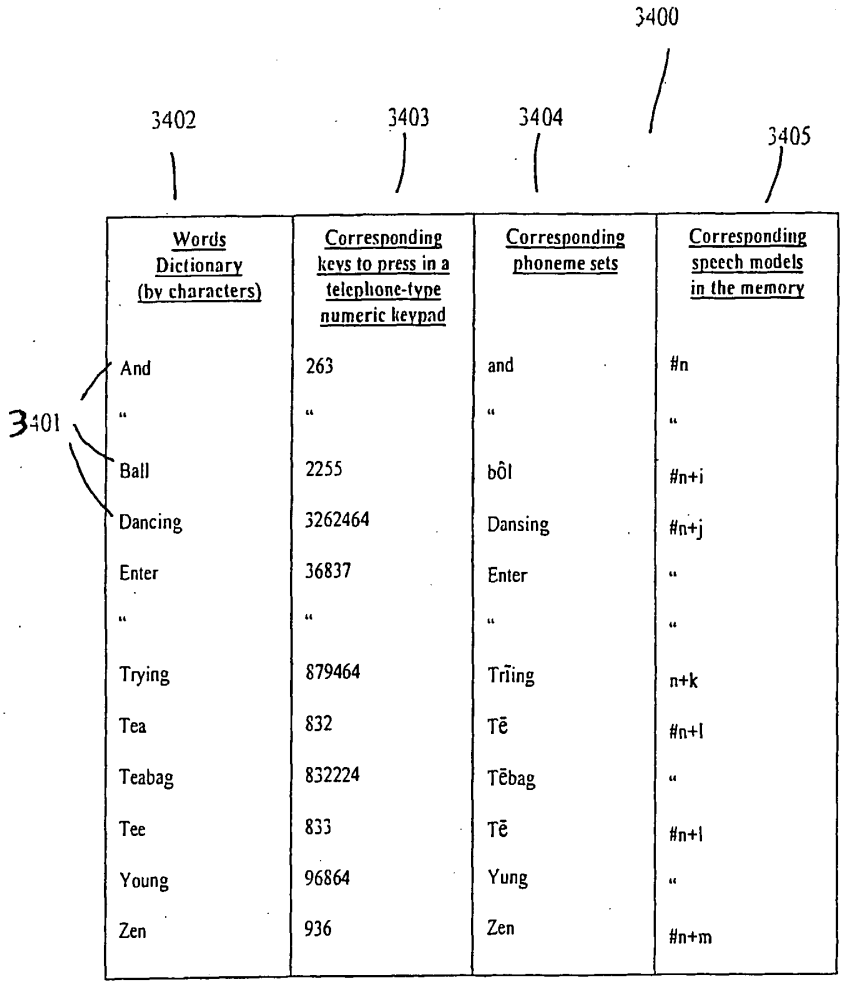

3300
3305
3302
3303
3309
3308
3306
3304
3301
3307
1
2 ABC
3 DEF
4 GHI
5 JKL
6 MNO
7 PQRS
8 TUV
9 WXYZ
*
0
#

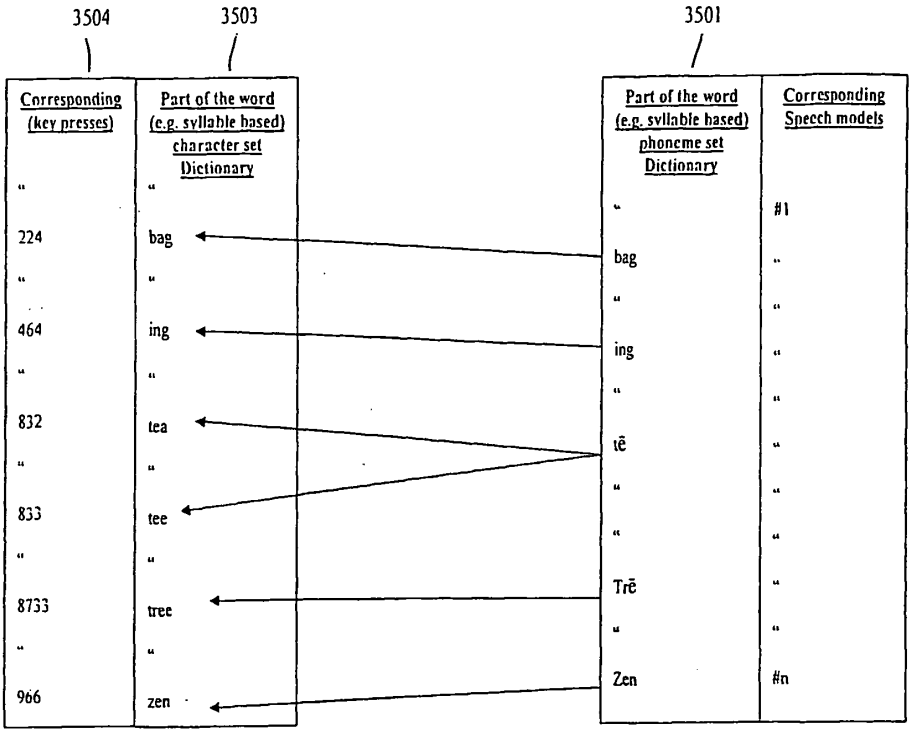
Fig. 33



Words Dictionary (by characters)	Corresponding keys to press in a telephone-type numeric keypad	Corresponding phoneme sets	Corresponding speech models in the memory
And	263	and	#n
"	"	"	"
Ball	2255	bôl	#n+i
Dancing	3262464	Dansing	#n+j
Enter	36837	Enter	"
"	"	"	"
Trying	879464	Trīing	n+k
Tea	832	Tē	#n+l
Teabag	832224	Tēbag	"
Tee	833	Tē	#n+l
Young	96864	Yung	"
Zen	936	Zen	#n+m

Fig. 34

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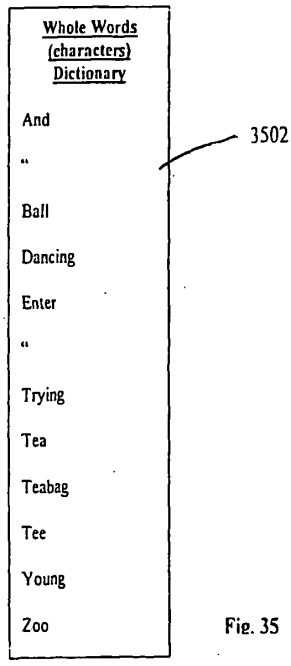


Fig. 35

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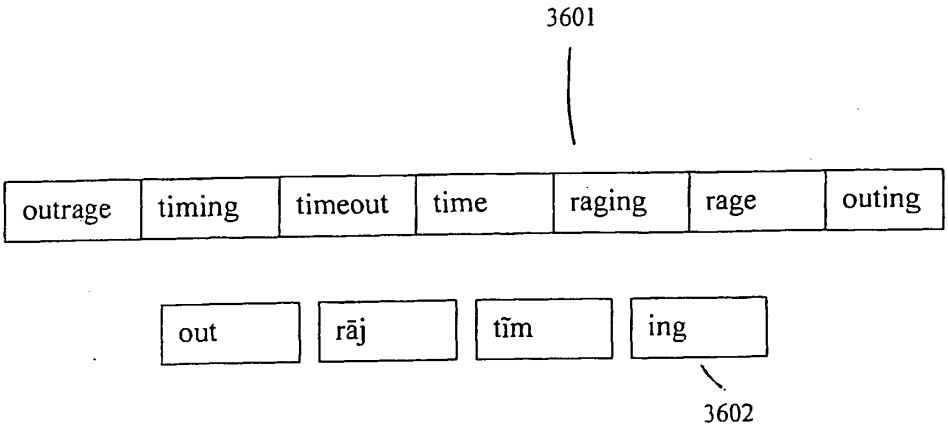

3601
outrage
timing
timeout
time
raging
rage
outing
out
rāj
tīm
ing
3602

Fig. 36

A Speech/phonemes at the beginning of a syllable in a word	B Characters sets having pronunciation at least substantially similar to the phonemes set of A	C words having portions (e.g. syllables) with starting: phoneme-sets of A or characters sets of B
ta	ta,	tap, tango
tā	ta, tai,	take, tailor
tā	tas,	taste
tô	ta, tau	talk, taupe
top	top	Top
te	te	tent
ti	ti	tilt
tip	tip	tippet
tī	ti, tie, ty	re-tire ("ti" in the beginning of the middle syllable), tiebreak, type
tē	t, tee, tea, ty	t, teeth, team, security
tōō	to, too, two	to, tooth, two
trī	tri, try	tried, re-try
thi	thi, thir, thirst	thin, thirst, thirst
thrō	thro	throw
ing	in	trying

Fig. 37

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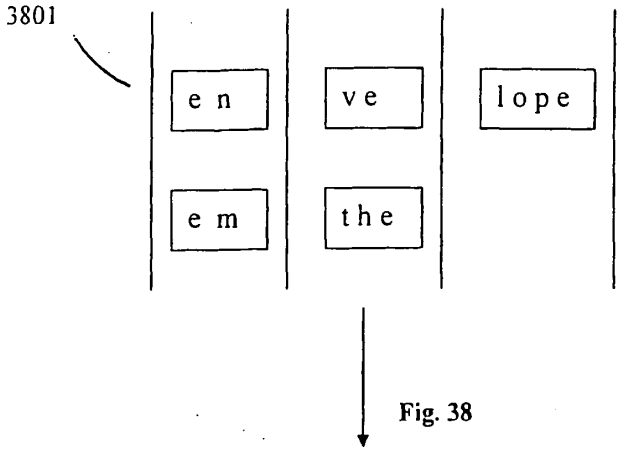


Fig. 38

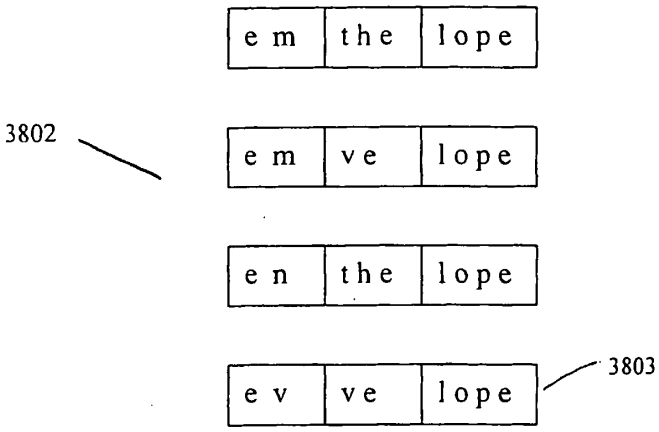


Fig. 39

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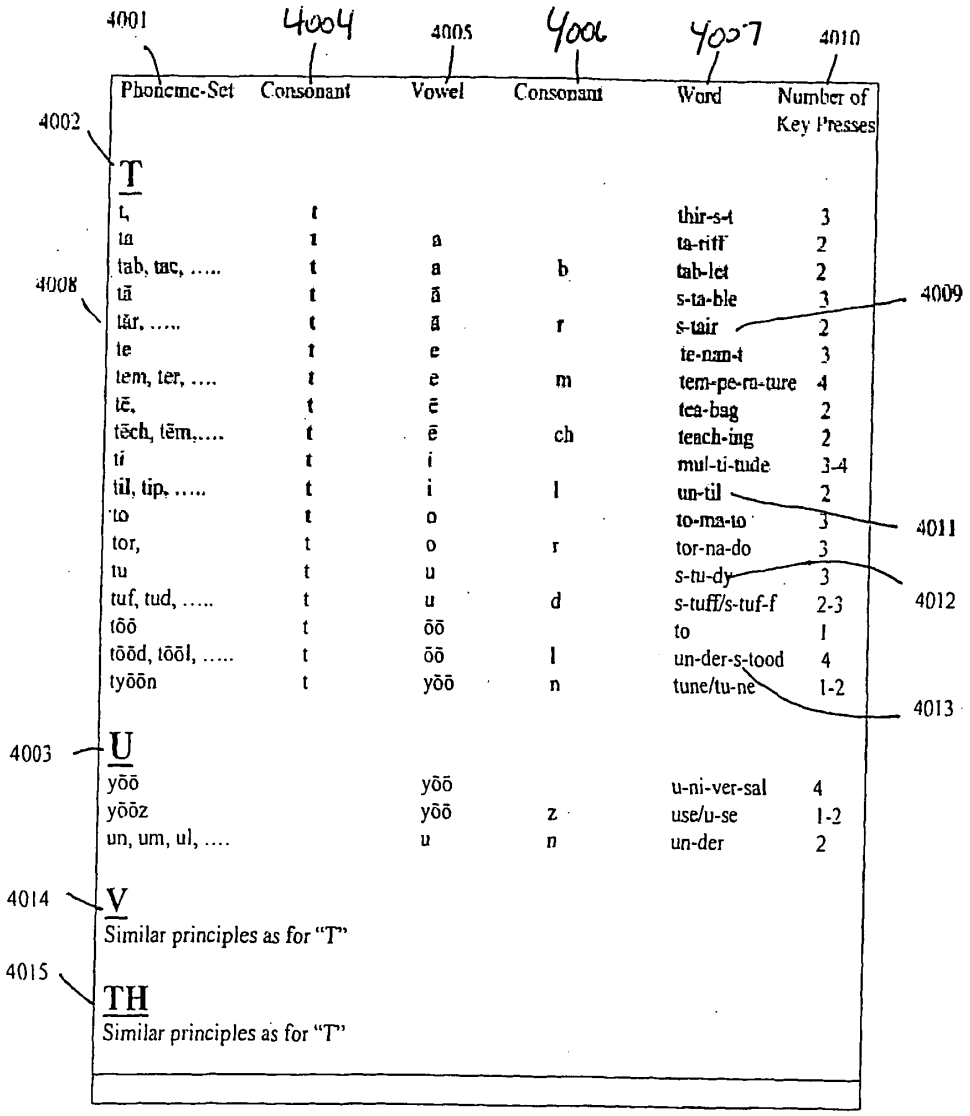


Fig. 40

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Phoneme-Set	Consonant	Vowel	Word	Number of Key Pressees
T				
t	t		thi-r-s-t	4
ta	t	a	ta-ri-f-f	4
tā	t	ā	s-ta-b-le	4
te	t	e	te-na-n-t	4
tē,	t	ē	tea-ba-g	3
ti	t	i	mu-l-ti-tu-de	5
to	t	o	to-ma-to	3
tu	t	u	s-tu-dy	3
tōō	t	ōō	to	1
tyōō	t	yōō	tu-ne	2
U	vowel	consonant		
yōōz	yōō		u-se	2
un, um, ul, ...	u	n	un-de-r	3
V				
Similar principles as for "T"				
TH				
Similar principles as for "T"				

4101

Fig. 41

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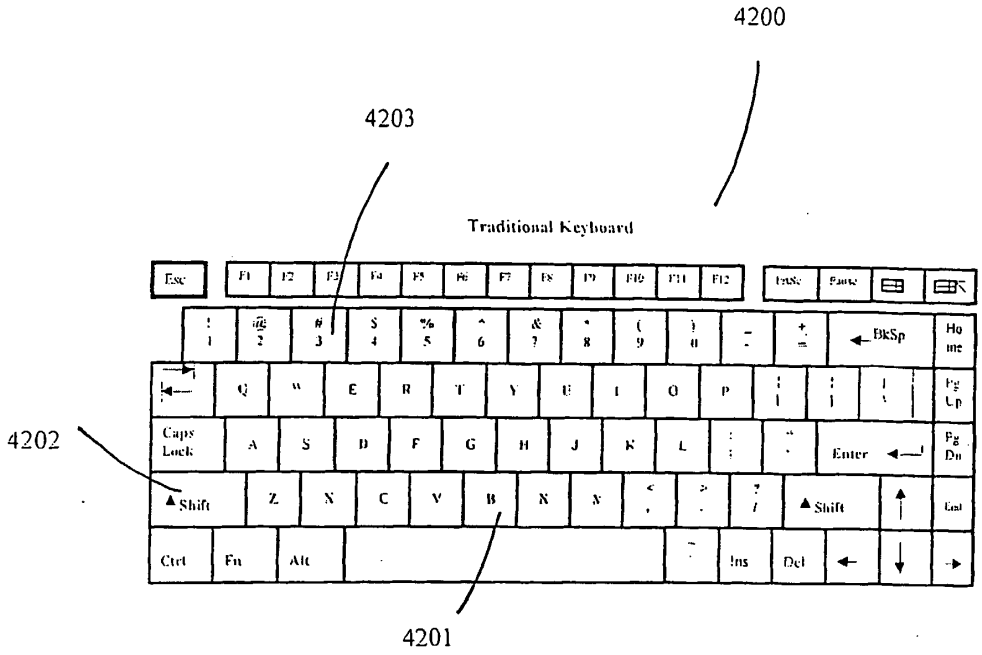


Fig. 42

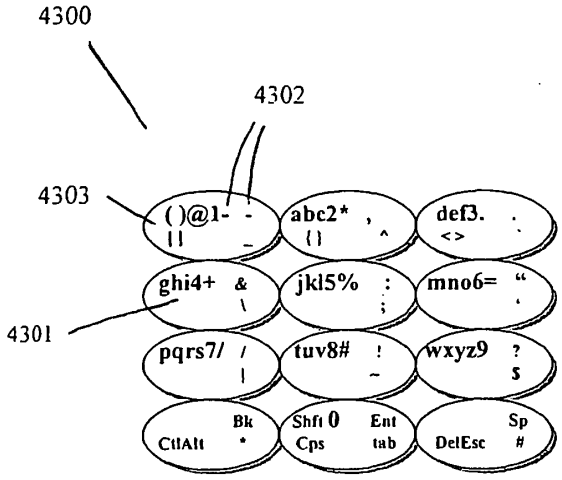

4300
4302
4303
4301
()@1- -
abc2* ,
def3. .
ghi4+ &
jkl5% :
mno6= “
pqrs7/ /
tuv8# !
wxyz9 ?
Bk
CtlAlt
Shft 0
Cps
Ent
tab
Sp
DelEsc

Fig. 43

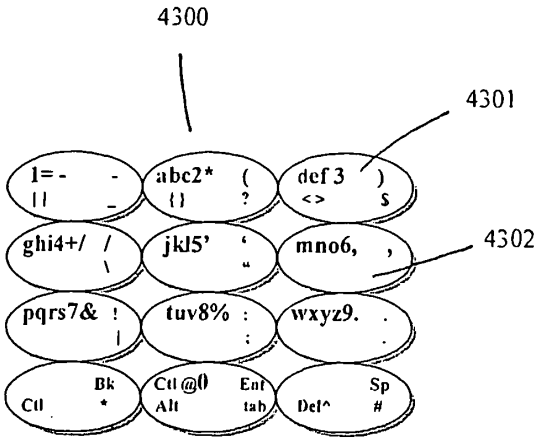


Fig. 43a

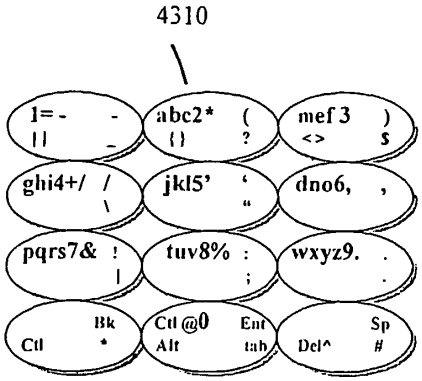


Fig. 43b

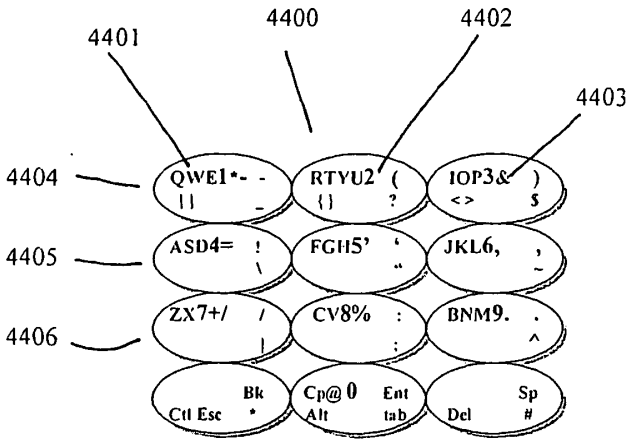


Fig. 44a

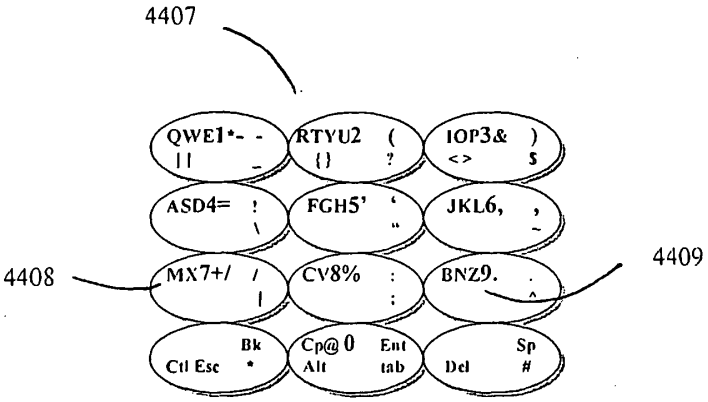


Fig. 44b

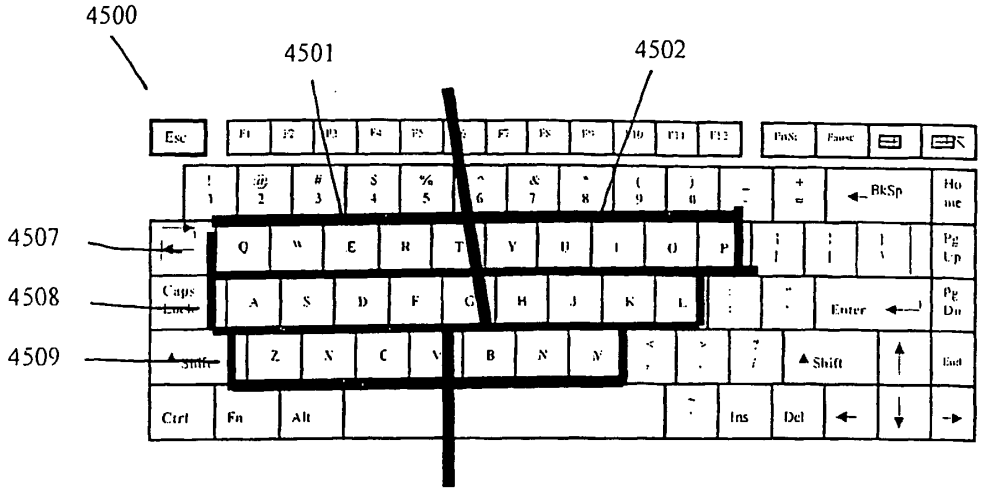


Fig. 45

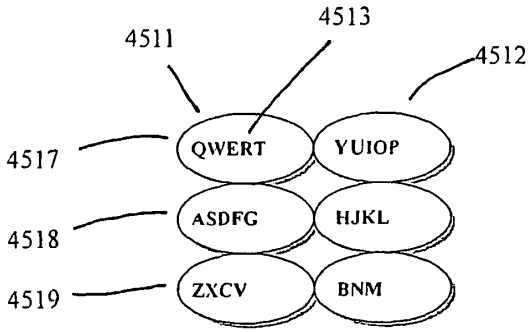


Fig. 45a

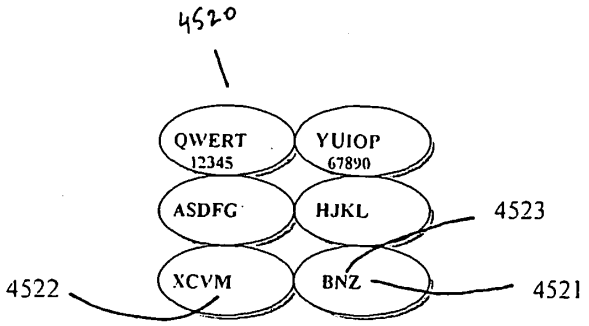


Fig. 45b

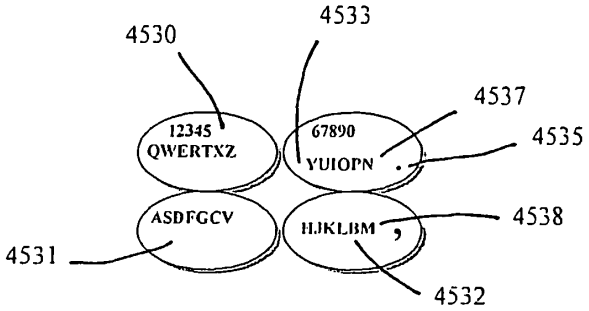


Fig. 45c

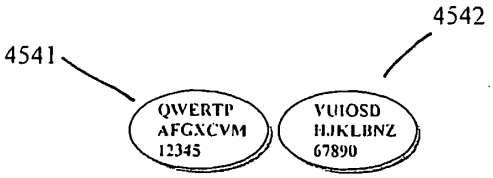


Fig. 45d

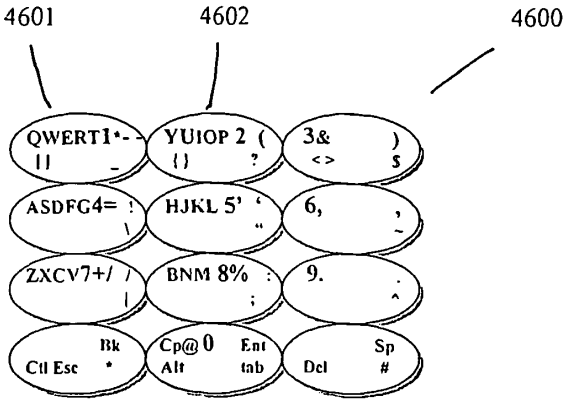


Fig. 46a

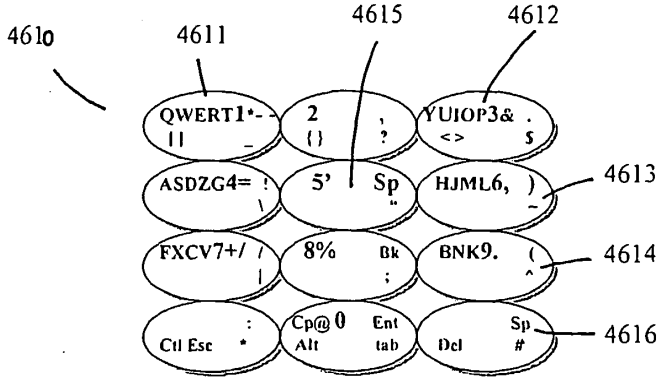


Fig. 46b

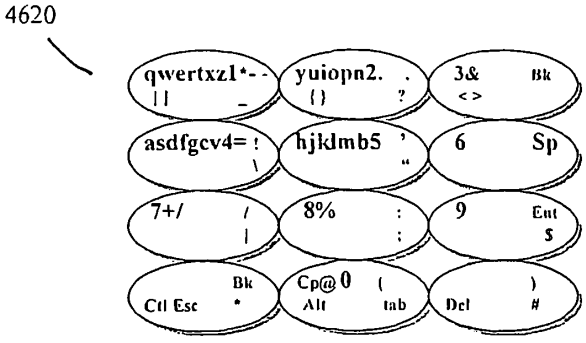


Fig. 46c

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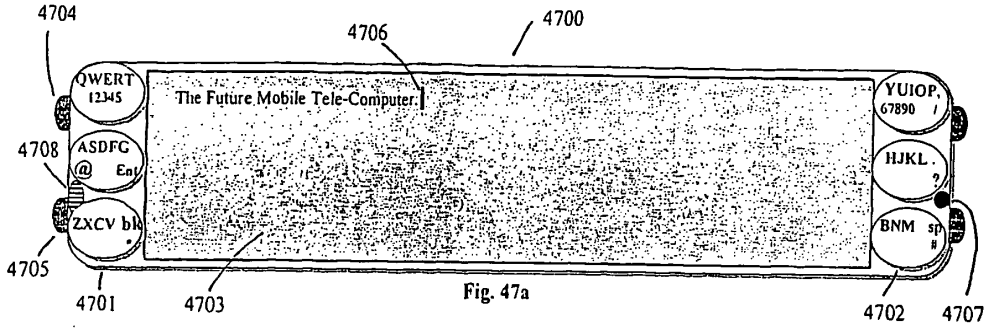


Fig. 47a

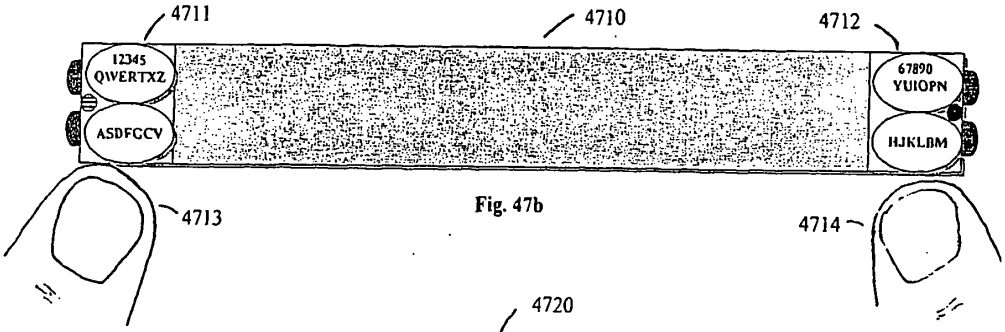


Fig. 47b

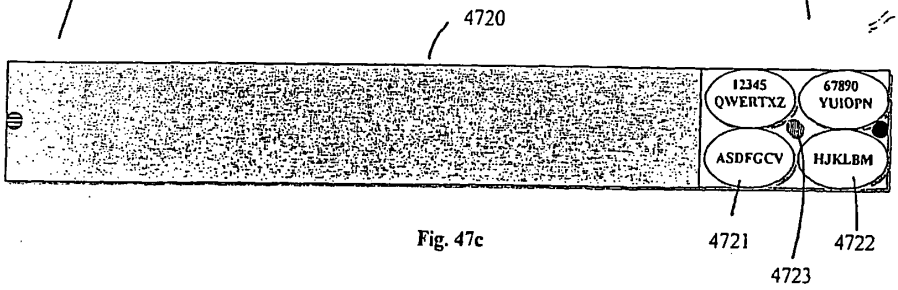


Fig. 47c

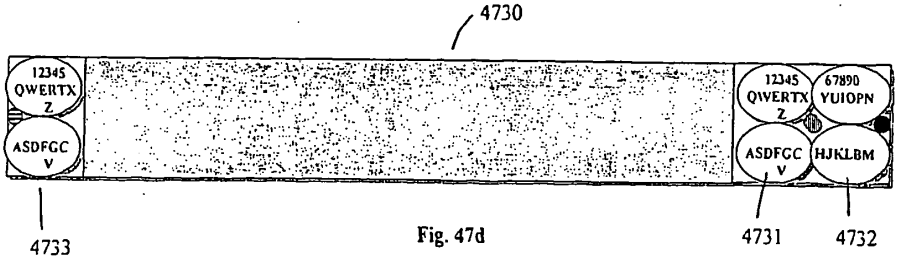


Fig. 47d

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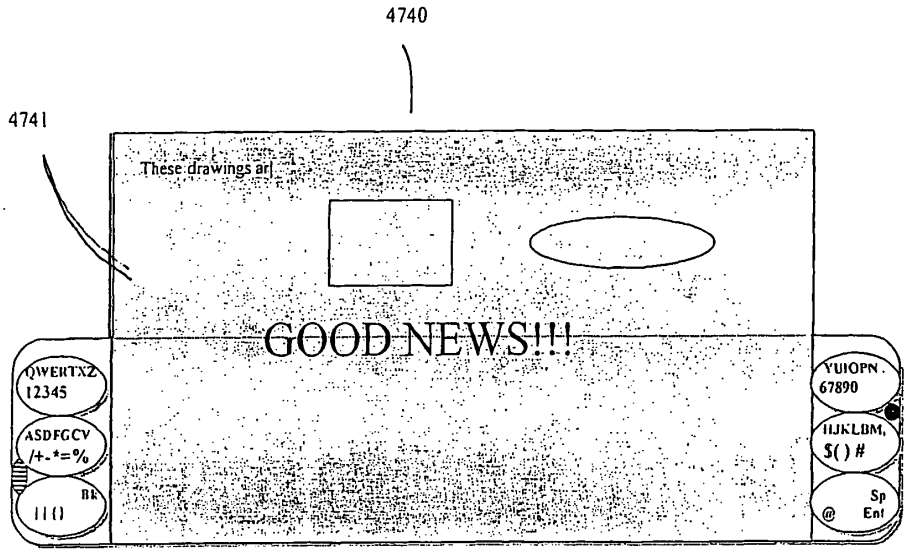


Fig. 47e

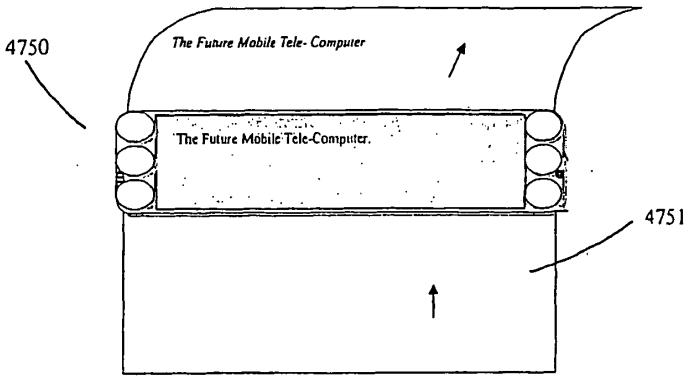


Fig. 47f

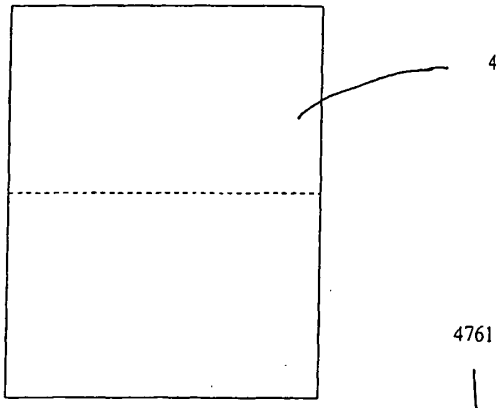


Fig. 47g

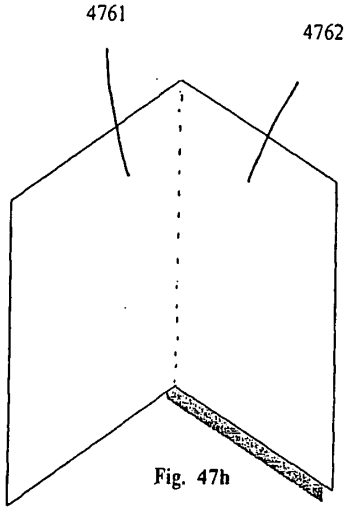


Fig. 47h

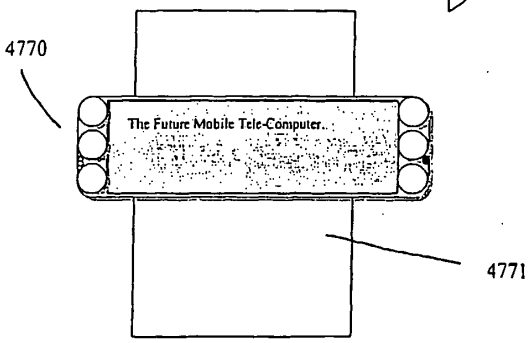


Fig. 47i

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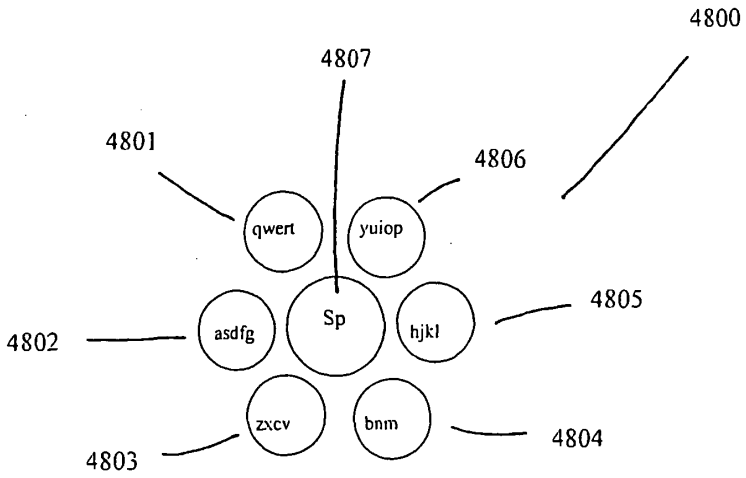

4800
4807
4801
4806
qwert
yuiop
4805
Sp
4802
asdfg
hjkl
zxcv
bnm
4804
4803

Fig. 48

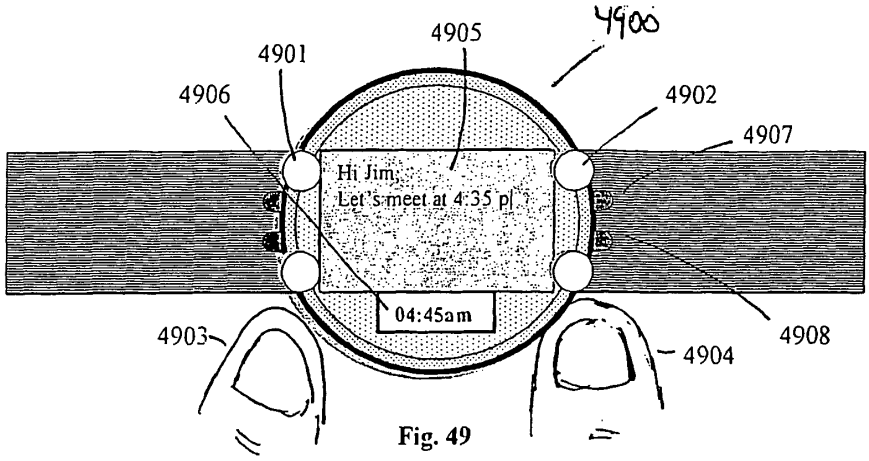


Fig. 49

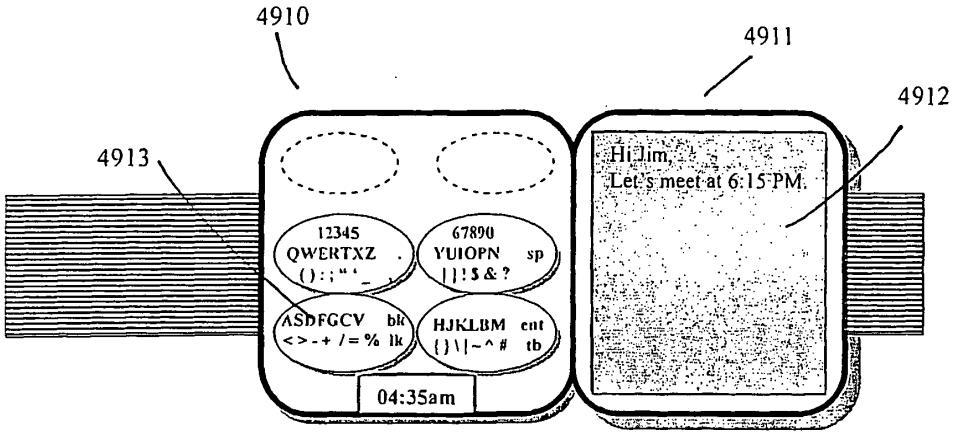


Fig. 49a

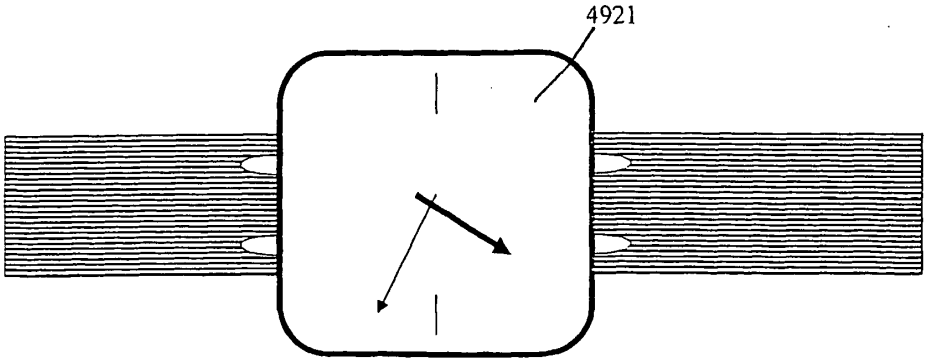


Fig. 49b

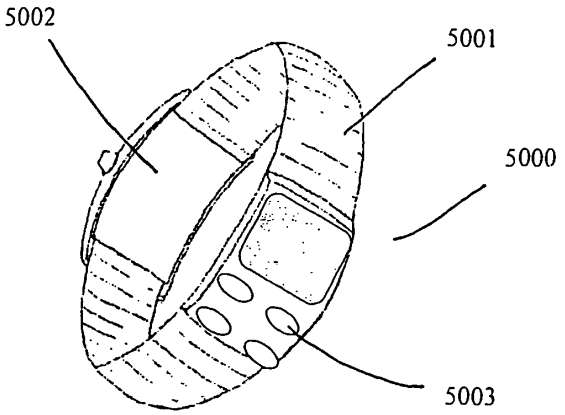


Fig. 50a

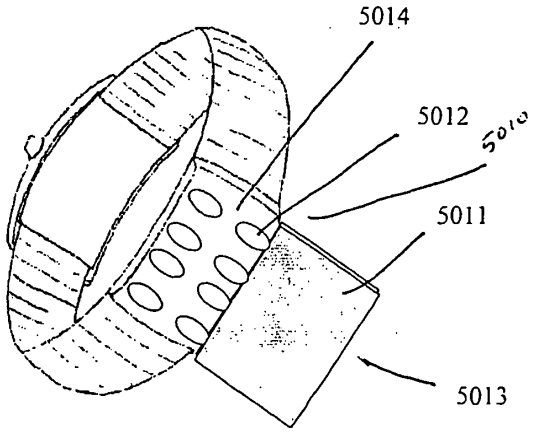


Fig. 50b

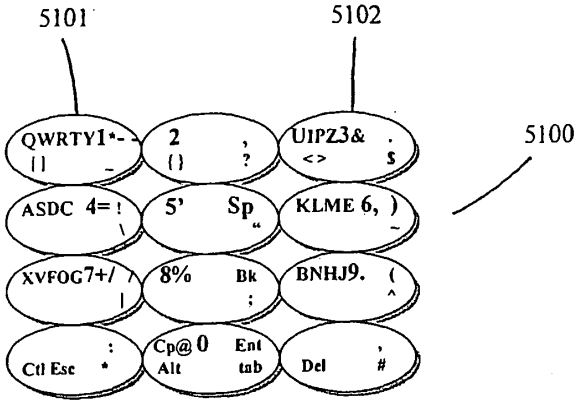


Fig. 51

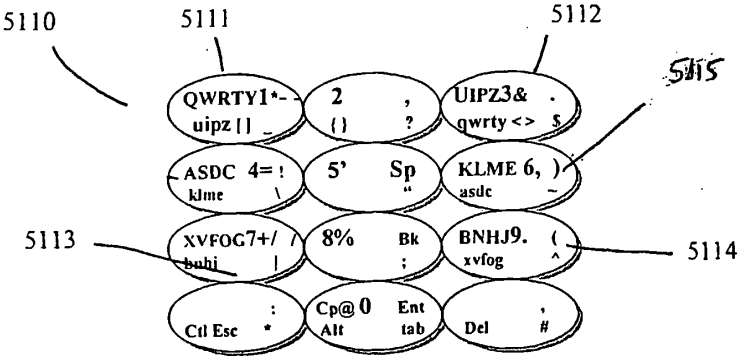


Fig. 51a

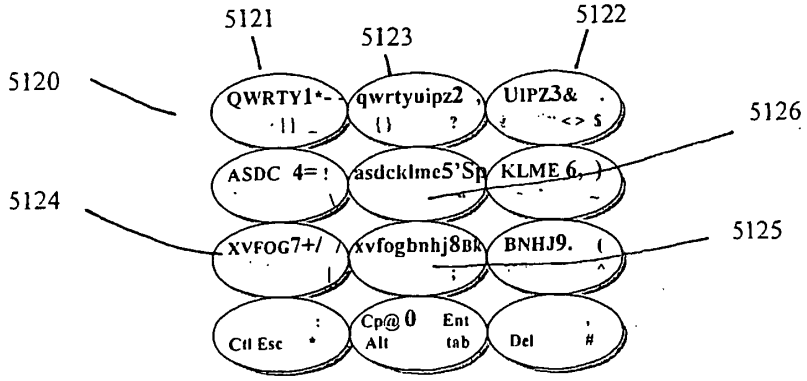


Fig. 51b

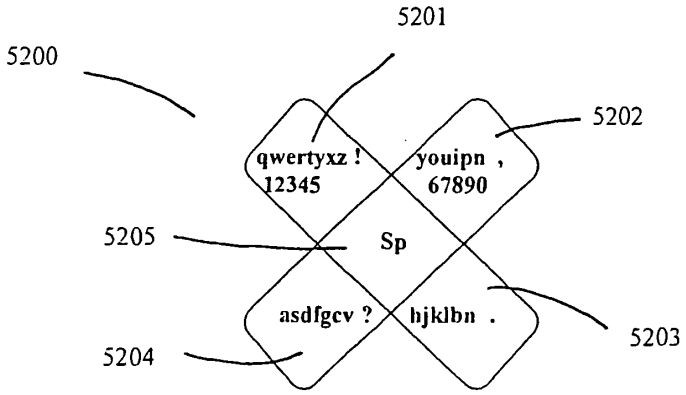


Fig. 52

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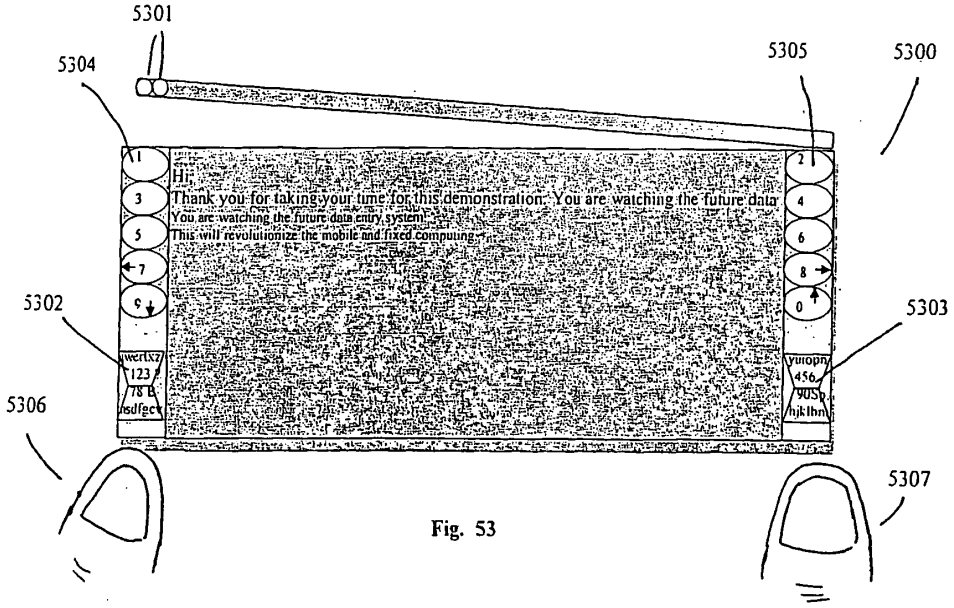


Fig. 53

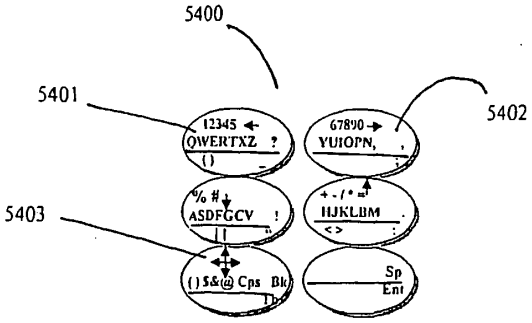


Fig. 54

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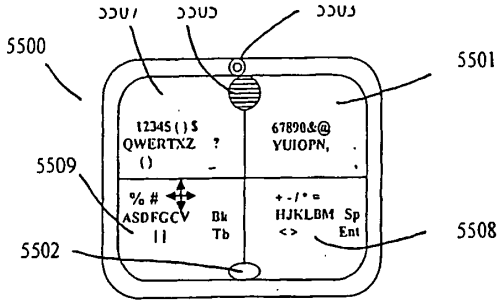


Fig. 55a

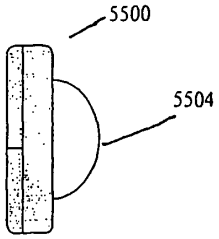


Fig. 55b

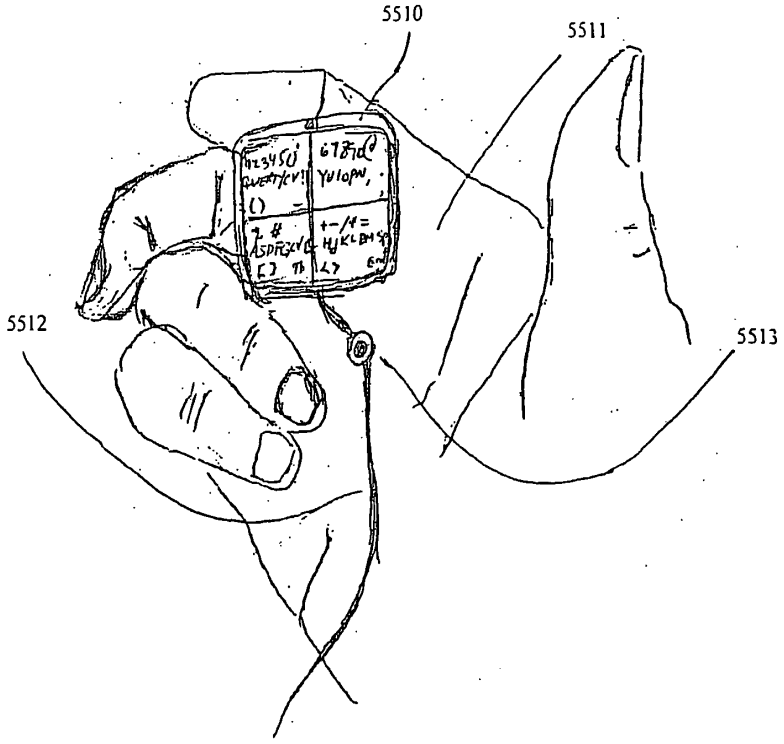


Fig. 55c

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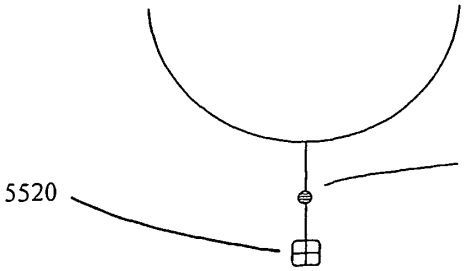


Fig. 55d

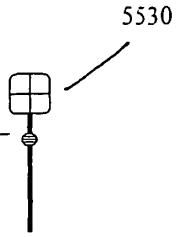


Fig. 55e

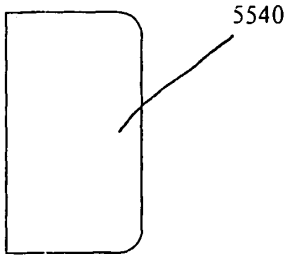


Fig. 55f

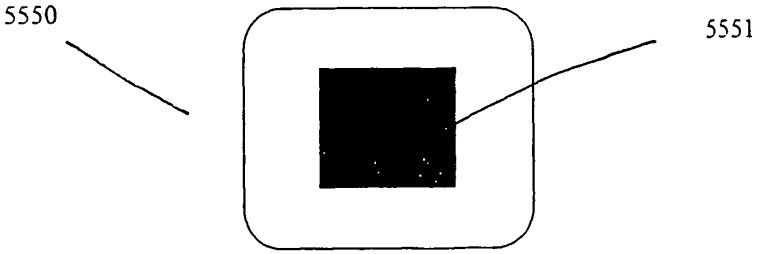


Fig. 55g

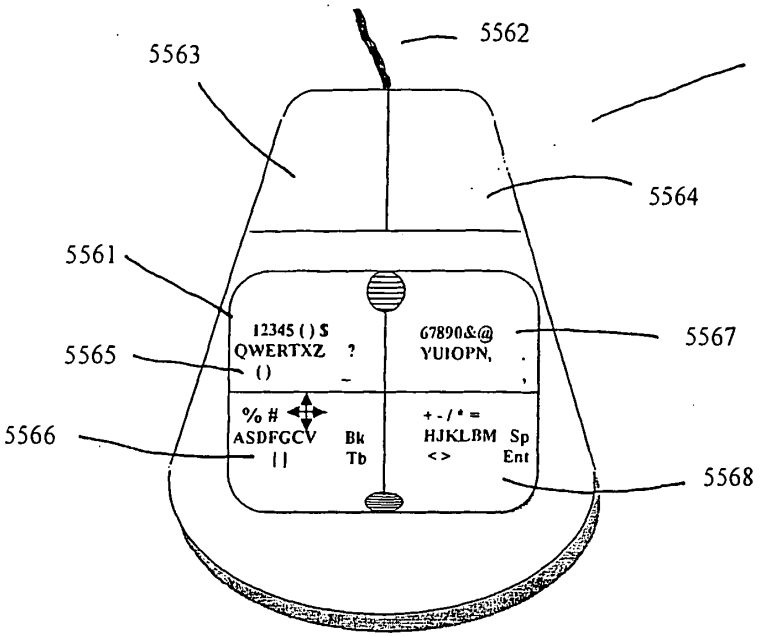


Fig. 55h

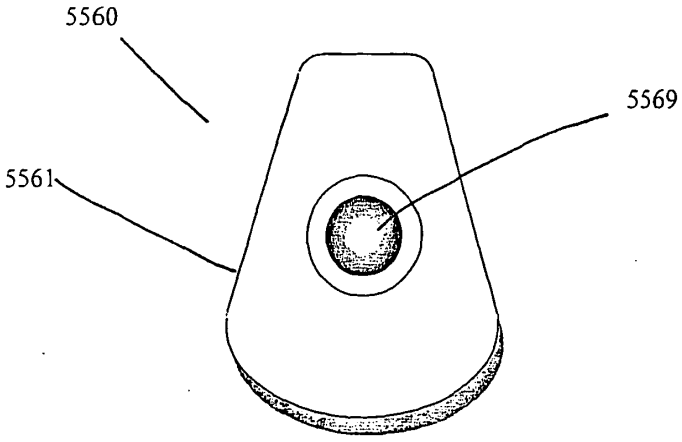


Fig. 55i

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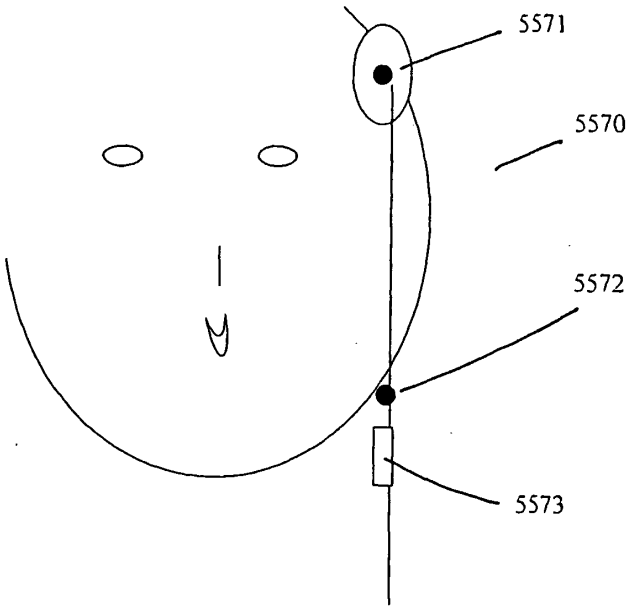


Fig. 55j

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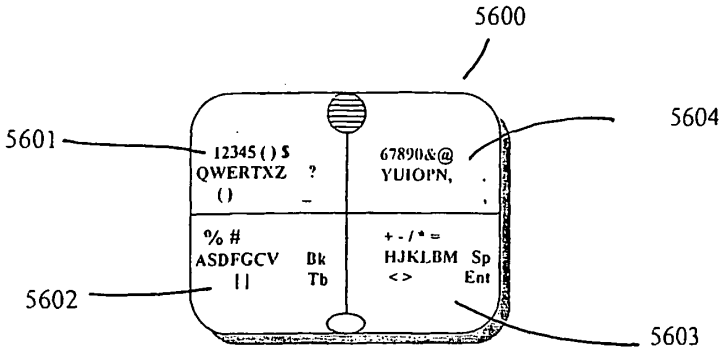


Fig. 56

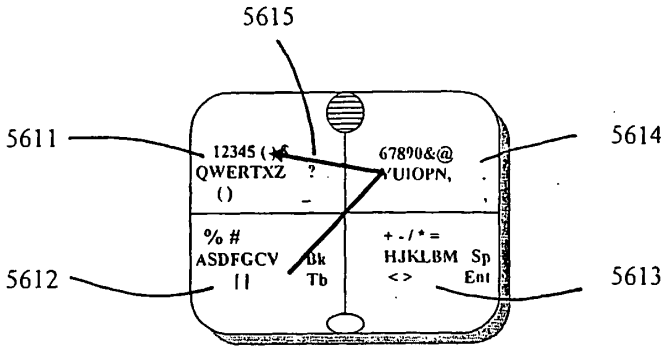


Fig. 56a

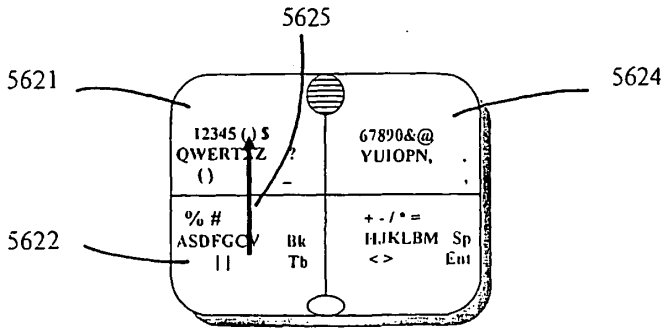


Fig. 56b

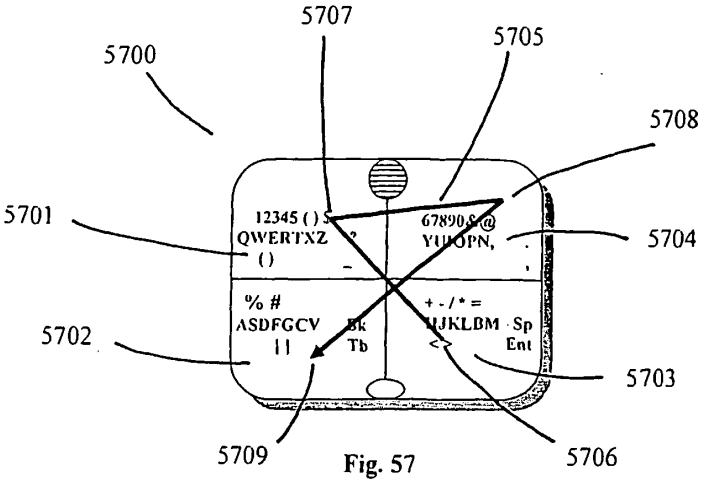


Fig. 57

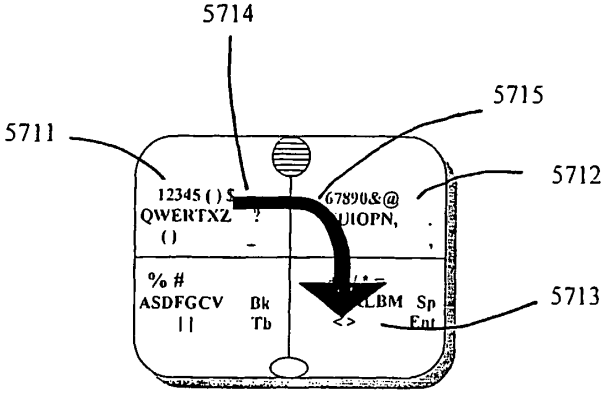


Fig. 57a

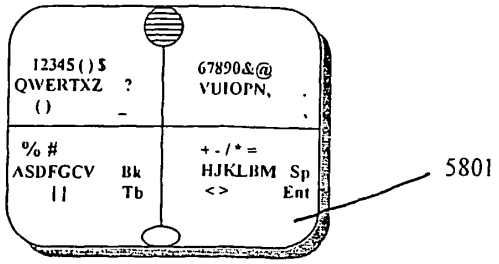


Fig. 58a

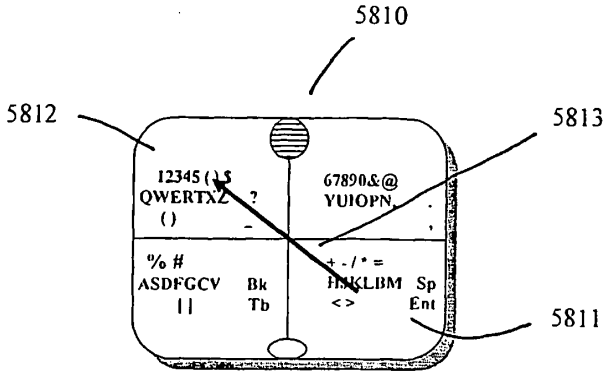


Fig. 58b

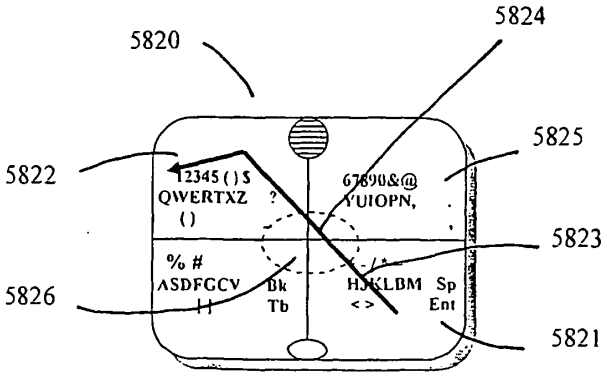


Fig. 58c

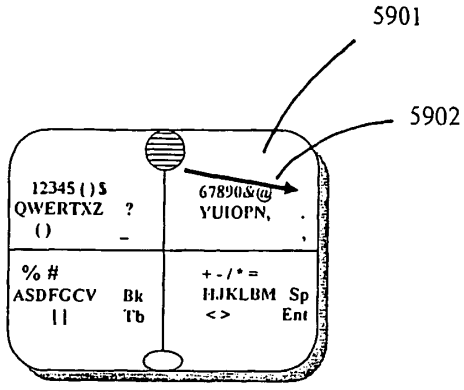


Fig. 59a

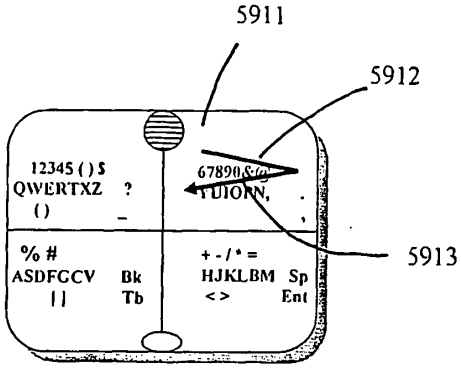


Fig. 59b

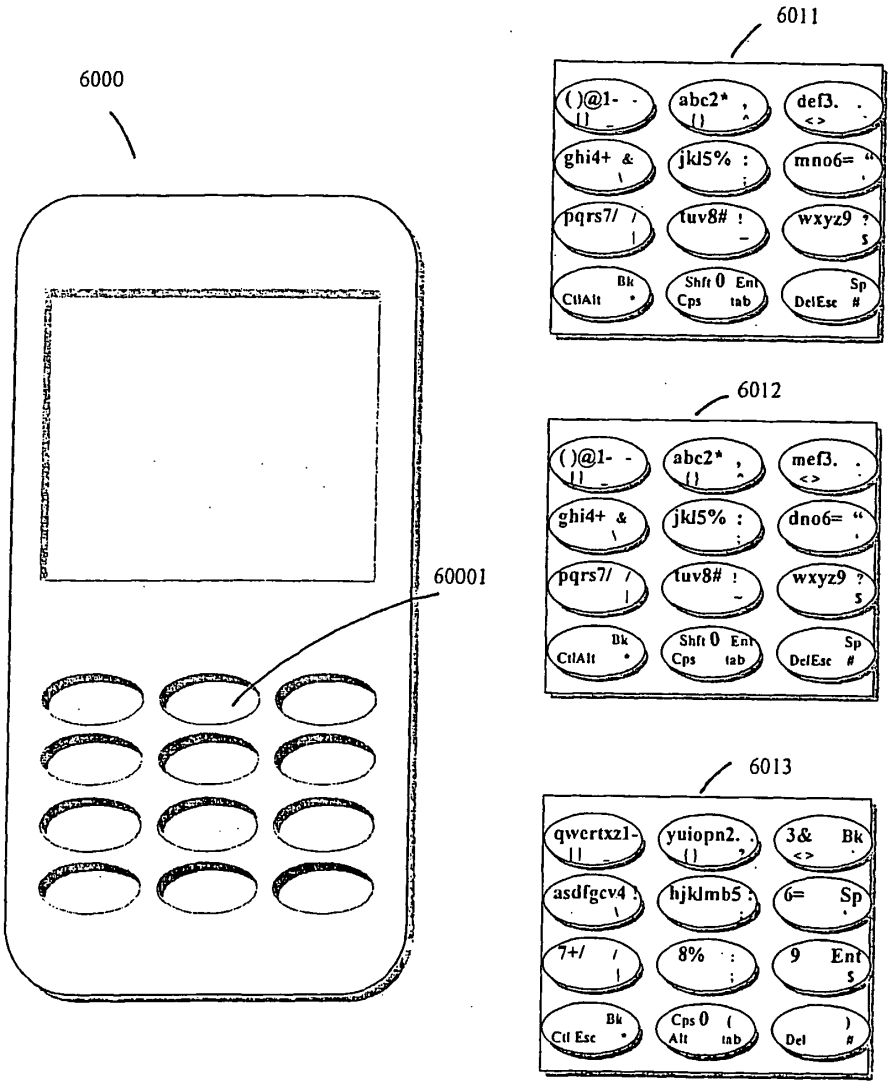


Fig. 60

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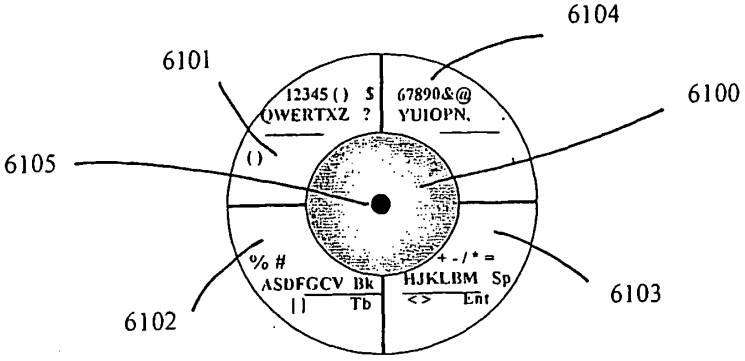


Fig. 61a

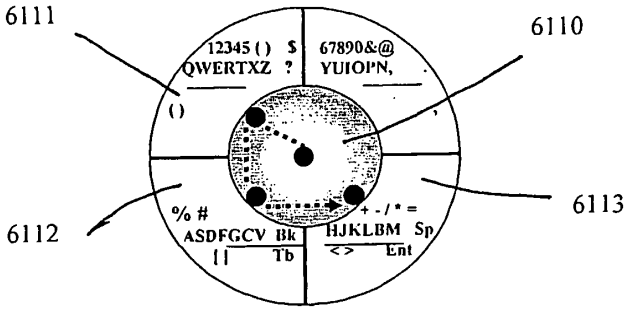


Fig. 61b

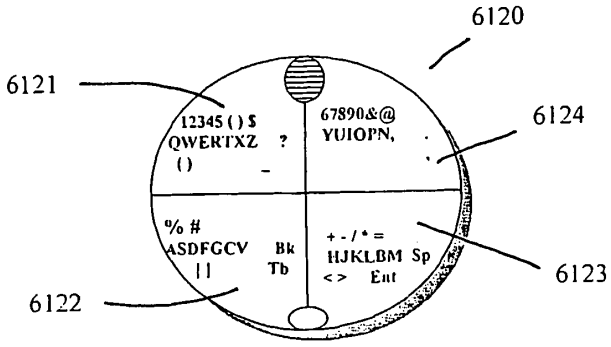


Fig. 61c

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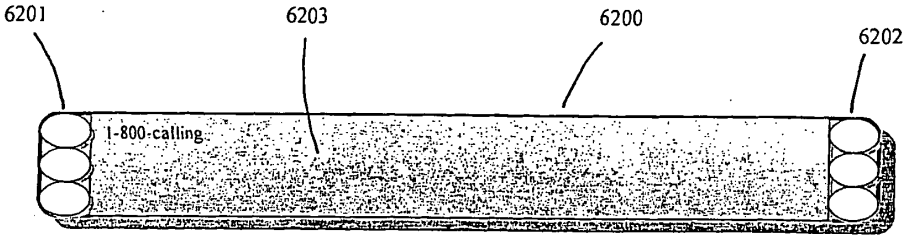


Fig. 62a

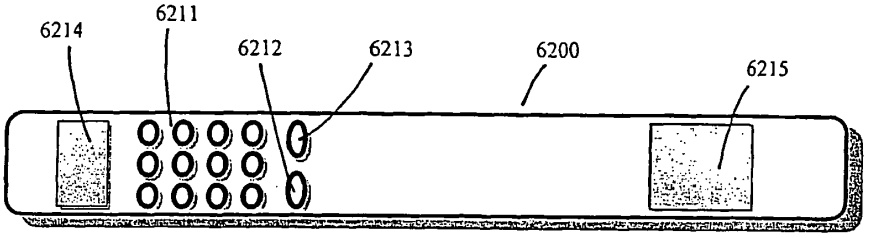


Fig. 62b

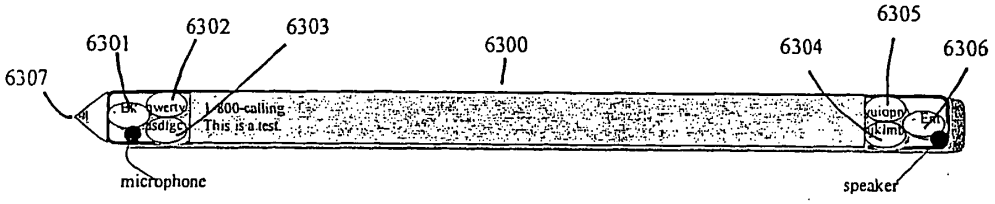


Fig. 63a

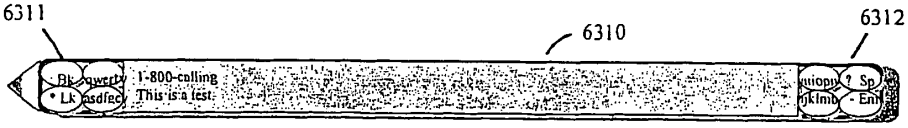


Fig. 63b

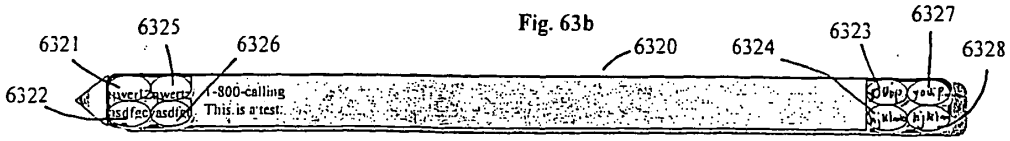


Fig. 63c

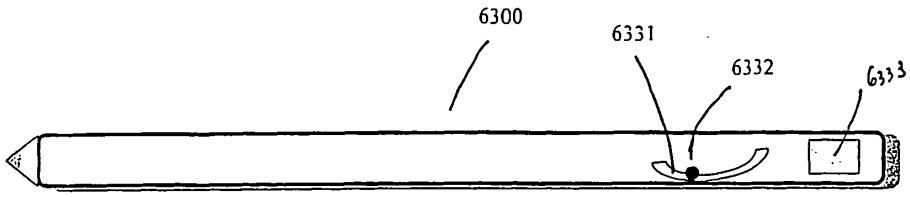


Fig. 63d

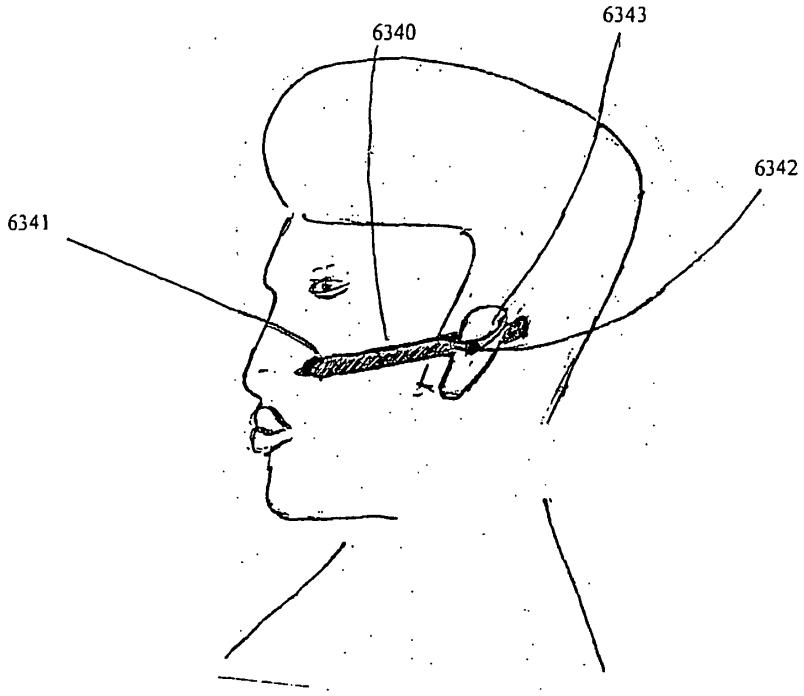


Fig. 63e

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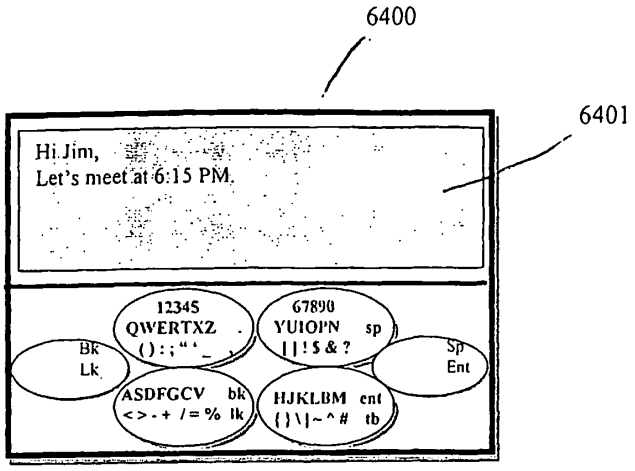


Fig. 64a

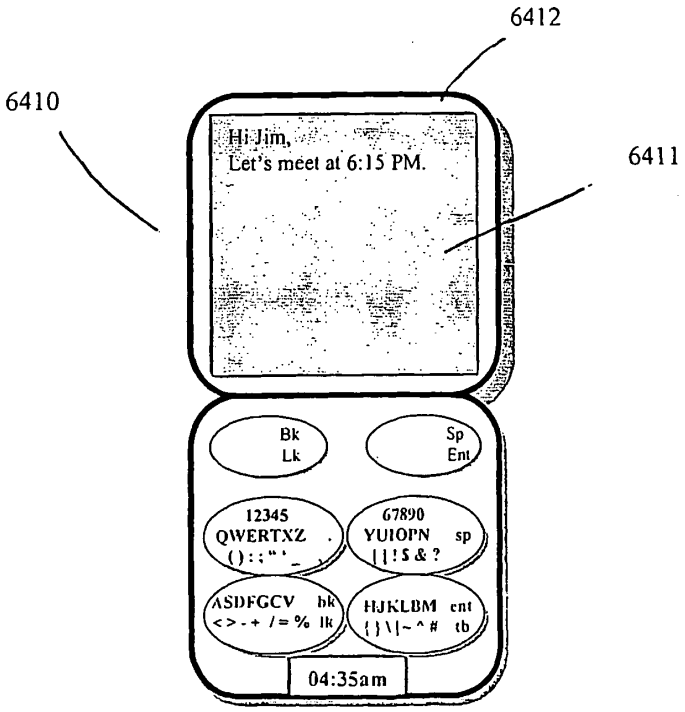


Fig. 64b

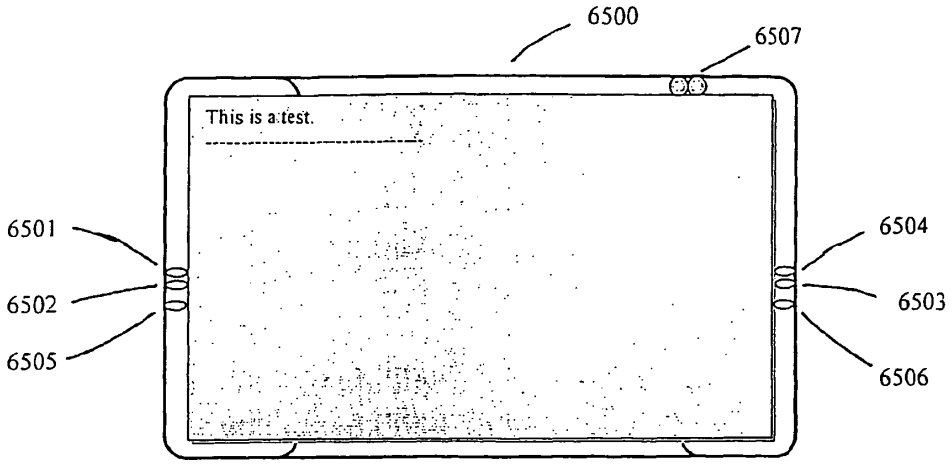


Fig. 65a

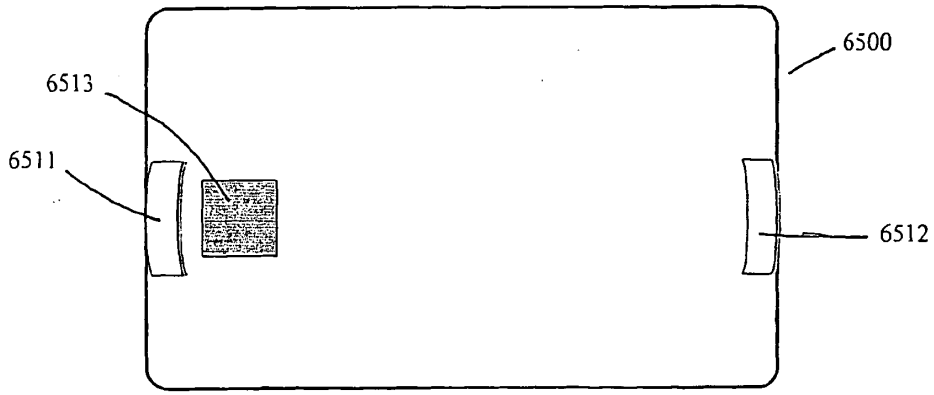


Fig. 65b

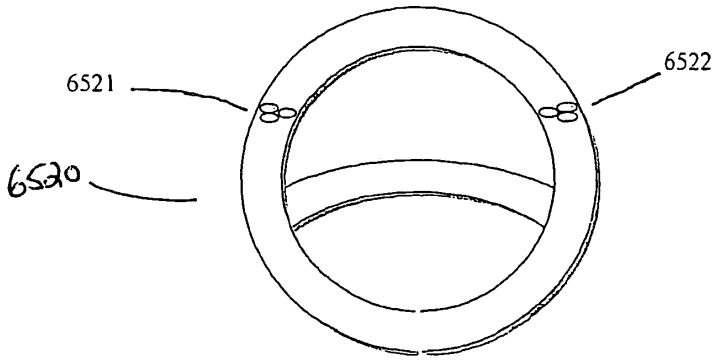


Fig. 65c

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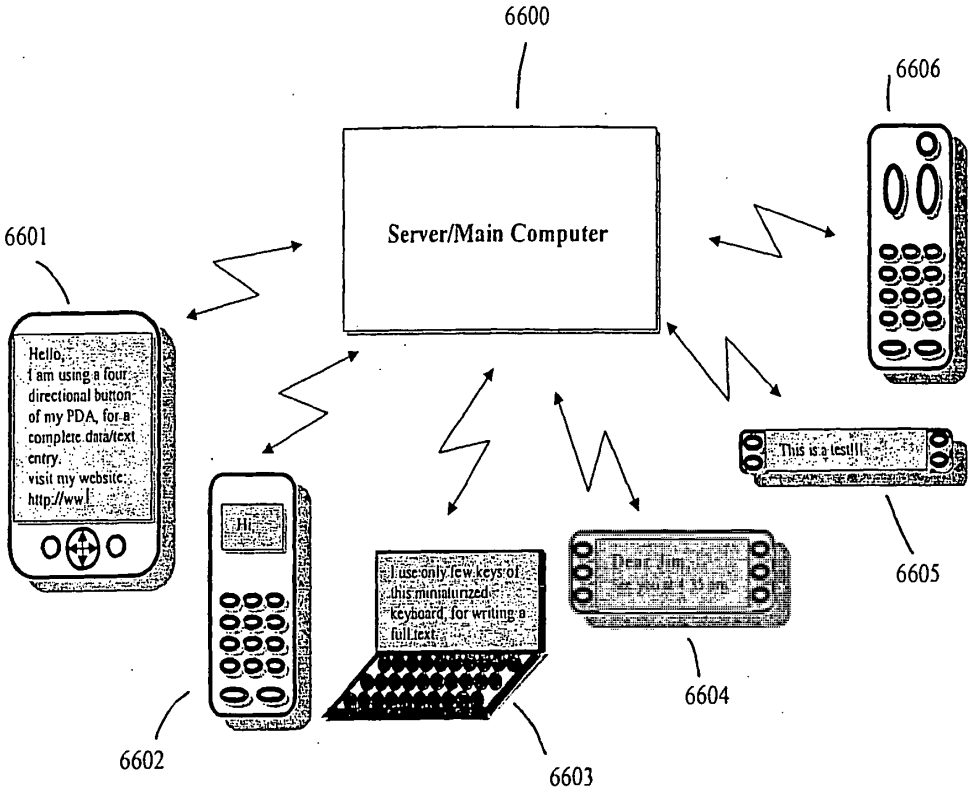

6600
6606
6601
Server/Main Computer
Hello,
I am using a four directional button of my PDA, for a complete data/text entry.
visit my website:
http://ww
Hi
I use only few keys of this miniaturized keyboard, for writing a full text.
Dear Jim,
This is a test!!!
6605
6604
6602
6603

Fig. 66

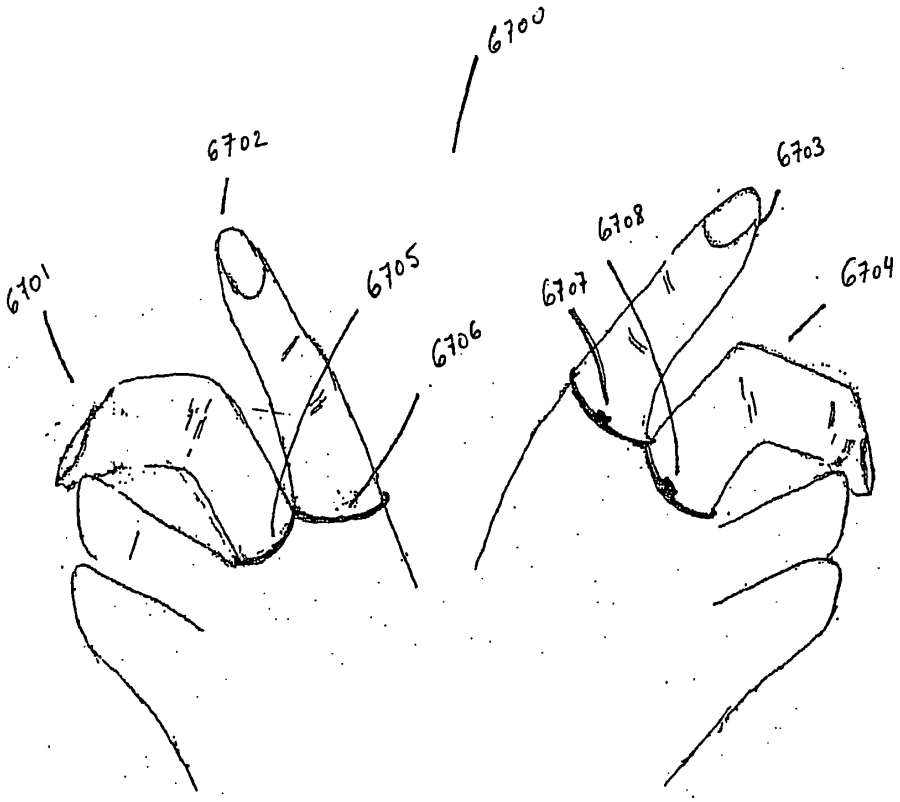


Fig. 67

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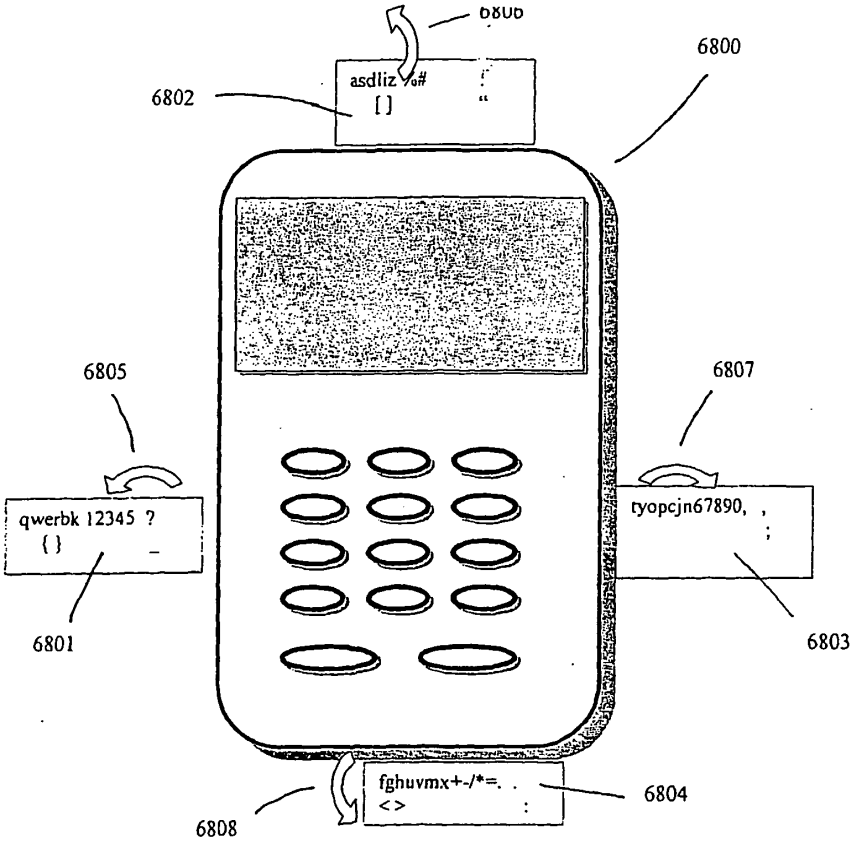


Fig. 68

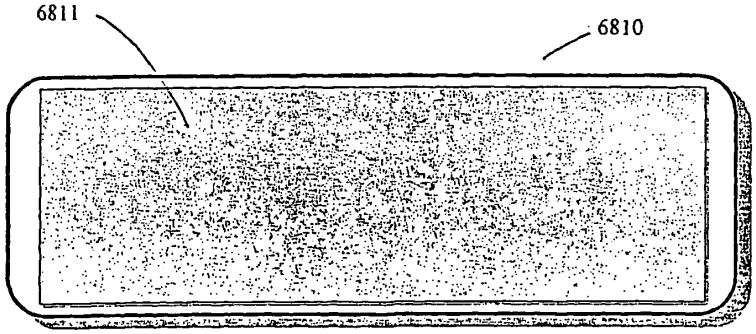


Fig. 68a

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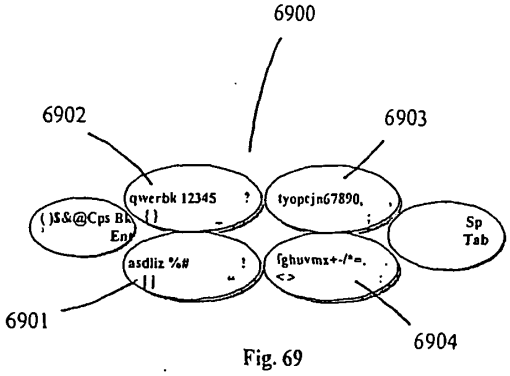


Fig. 69

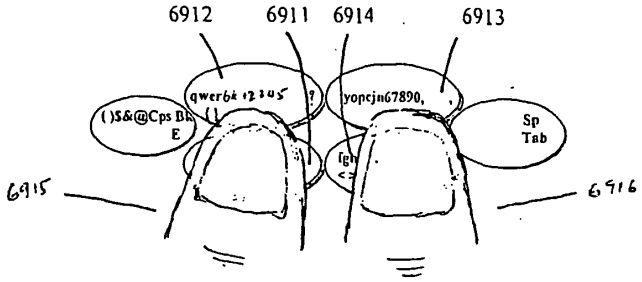


Fig. 69a

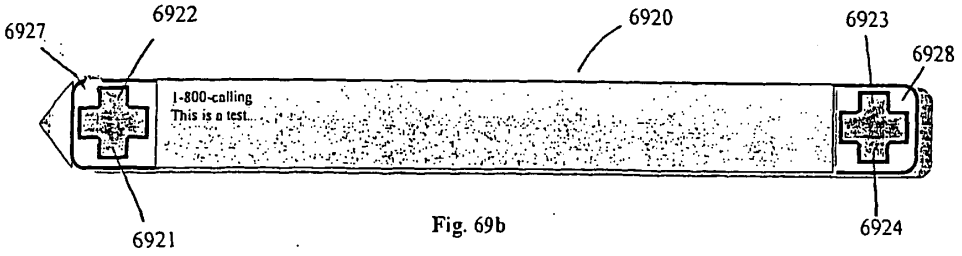


Fig. 69b

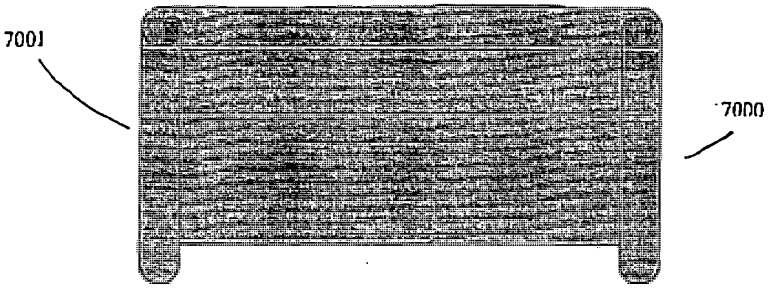


Fig. 70a

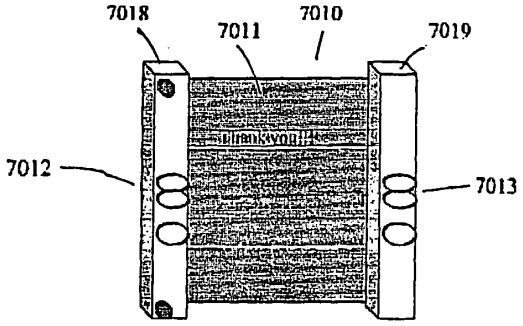


Fig. 70b

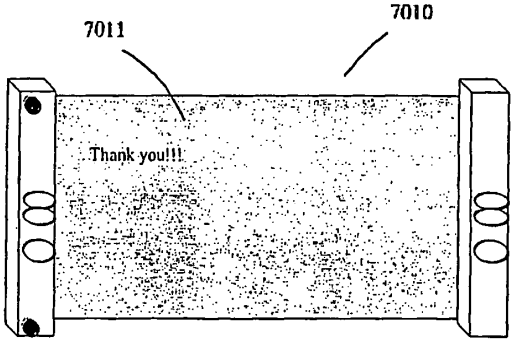


Fig. 70c

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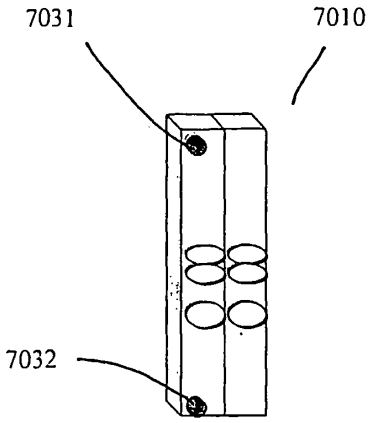


Fig. 70d

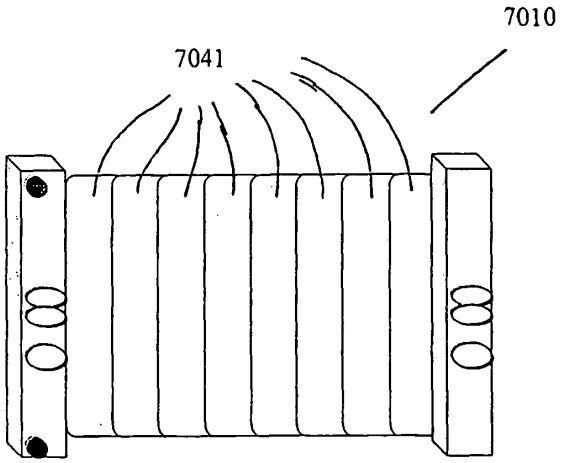


Fig. 70e

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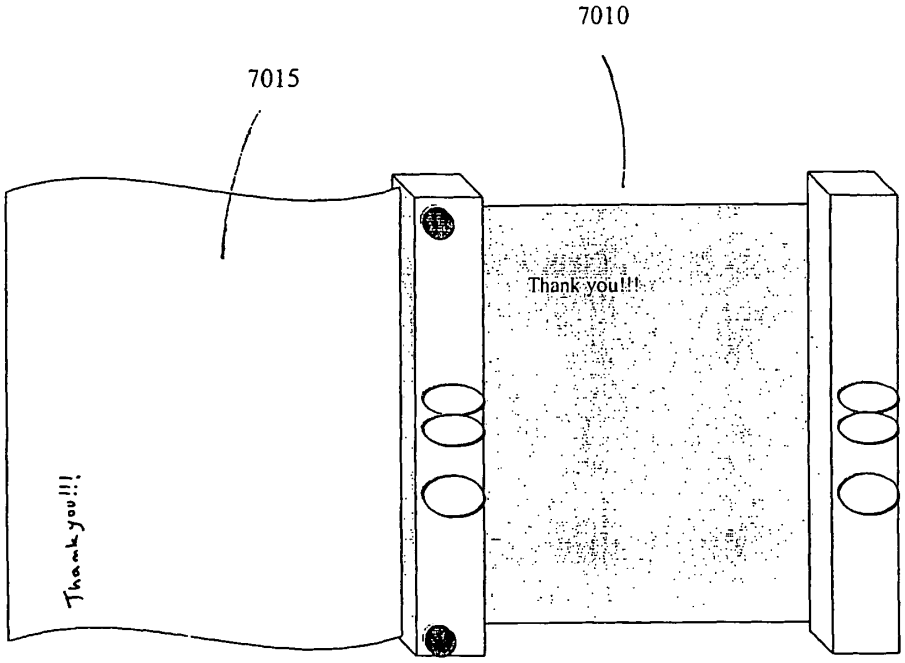


Fig. 70f

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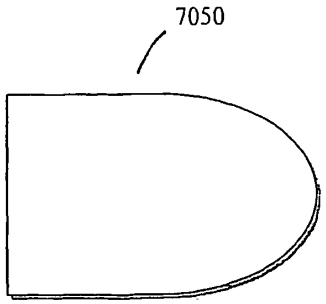


Fig. 70g

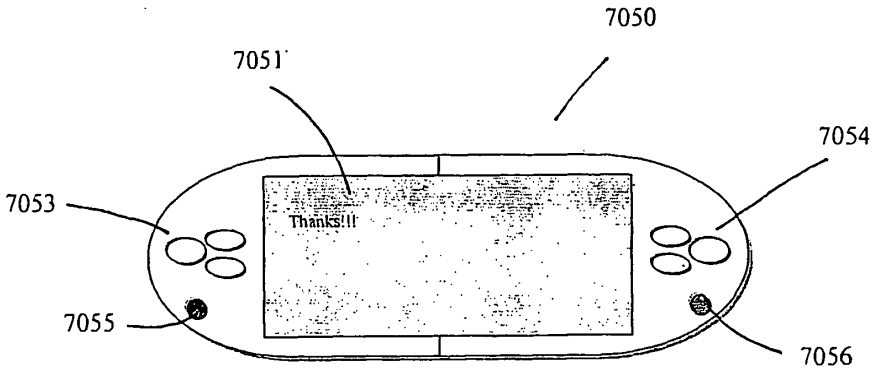


Fig. 70h

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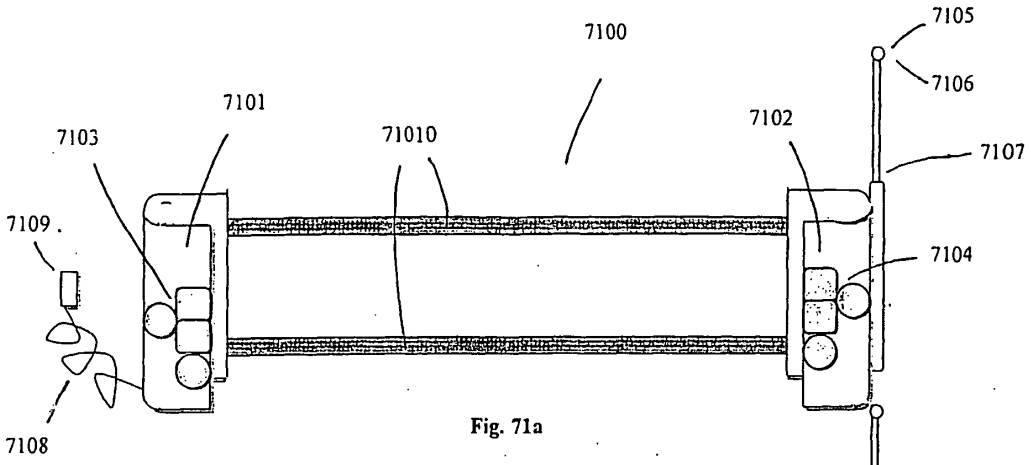


Fig. 71a

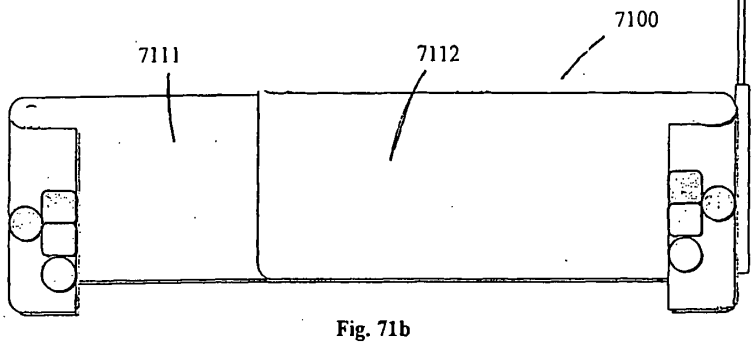


Fig. 71b

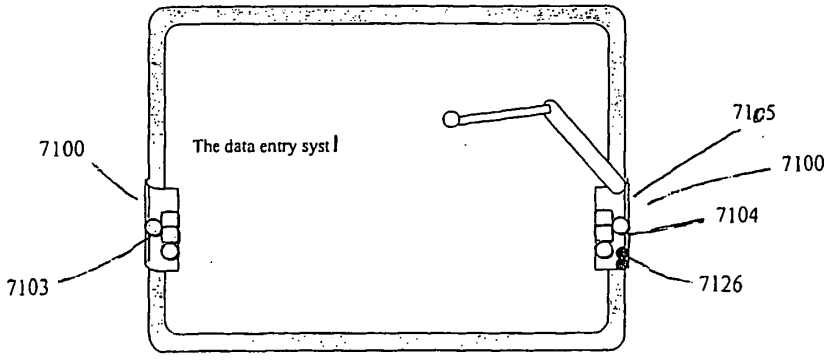


Fig. 71c

Samsung Exhibit 1006, Page 578 of 1063

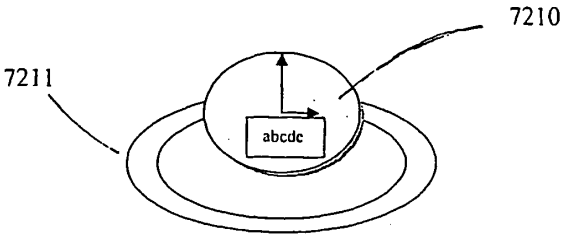


Fig. 72a



Fig. 72b

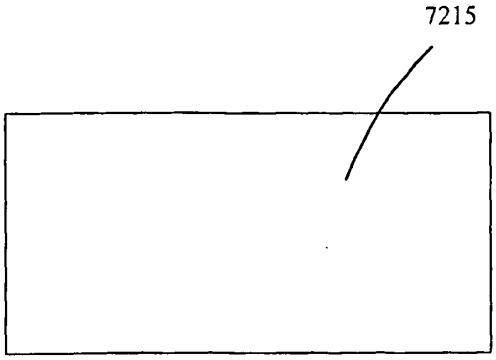


Fig. 72c

INTERNATIONAL SEARCH REPORT

International application No
PCT/US04/12082

A. CLASSIFICATION OF SUBJECT MATTER
IPC(7) : G09G 05/00
US CL : 345/168, 169, 172
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. : 345/168, 169, 172

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6,295,052 B1 (KATO et al) 25 September 2001 (25.09.2001), column 19, line 28 - column 20, line 67 and column 22, line 66 - column 24, line 39.	1
A	US 4,531,119 (NAKAYAMA et al) 23 July 1985 (23.07.1985).	1
A	US 5,790,103 (WILLNER) 04 August 1998 (04.08.1998).	1
A	US 5,867,149 (JAEGER) 02 February 1999 (02.02.1999).	1
A	US 6,326,952 B1 (AMRO et al) 04 December 2001 (04.12.2001).	1
A	US 6,445,381 B1 (CHOU) 03 September 2002 (03.09.2002).	1

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
05 August 2004 (05.08.2004)

Date of mailing of the international search report
23 AUG 2004

Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
Facsimile No. (703)305-3230

Authorized officer
Bipin Shalwala
Telephone No. (703) 305-4700

Form PCT/ISA/210 (second sheet) (January 2004)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US04/12082

Continuation of B. FIELDS SEARCHED Item 3:
EAST:
search terms: keypad, keyboard, key, button, pushbutton, symbol, alphabet, alphabetic, numeral, numeric, command, punctuation, finger, digit, recognition, sense, detect, multi-function key

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

Applicant's or agent's file reference 676-025PCT	**FOR FURTHER ACTION**	See item 4 below
International application No. PCT/US2004/012082	International filing date *(day/month/year)* 19 April 2004 (19.04.2004)	Priority date *(day/month/year)* 18 April 2003 (18.04.2003)]
International Patent Classification (IPC) or national classification and IPC [7] G09G 05/00		
Applicant GHASSABIAN, Benjamin, Firooz		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

   In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44*bis*.3(c) and 93*bis*.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44*bis* .2).

	Date of issuance of this report 21 October 2005 (21.10.2005)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Simin Baharlou
Facsimile No. +41 22 740 14 35	Telephone No. +41 22 338 71 30

Form PCT/IB/373 (January 2004)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

REC'D 25 AUG 2004
WIPO PCT

PCT

To:
JOSEPH SOFER, ESQ.
SOFER & HAROUN, LLP
317 MADISON AVENUE
SUITE 910
NEW YORK, NY 10017

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	23 AUG 2004
Applicant's or agent's file reference 676-025PCT	**FOR FURTHER ACTION** See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US04/12082	19 April 2004 (19.04.2004)	18 April 2003 (18.04.2003)

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

IPC(7): G09G 05/00 and US Cl.: 345/168, 169, 172

Applicant

GHASSABIAN, BENJAMIN FIROOZ

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(*b*) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US	Authorized officer
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450	Bipin Shalwala
Facsimile No. (703)305-3230	Telephone No. (703) 305-4700

Form PCT/ISA/237 (cover sheet) (January 2004)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US04/12082

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

☐ a sequence listing

☐ table(s) related to the sequence listing

b. format of material

☐ in written format

☐ in computer readable form

c. time of filing/furnishing

☐ contained in international application as filed.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US04/12082

Box No. V Reasoned statement under Rule 43 *bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	NONE	YES
	Claims	1	NO
Inventive step (IS)	Claims	NONE	YES
	Claims	1	NO
Industrial applicability (IA)	Claims	1	YES
	Claims	NONE	NO

2. Citations and explanations:

Claim 1 lacks novelty under PCT Article 33(2) as being anticipated by US 6,295,052 B1 (KATO et al).

KATO et al discloses a data input system [figure 11; 20] comprising a keypad [figure 11; 21-35] defining a plurality of keys, wherein each key contains at least one symbol of a group of symbols, said group of symbols divided into subgroups comprising at least one of alphabetical symbols, numeric symbols, and command symbols (see column 19, line 28 - column 20, line 67), wherein each subgroup is associated with at least a portion of a user's finger (see figure 20 and column 24, lines 29-39); and a finger recognition system in communication with at least one key of said plurality of keys, wherein said at least one key has at least a first symbol from a first subgroup and at least a second symbol from a second subgroup, wherein said finger recognition system is configured to recognize said portion of said user's finger when said finger interacts with said key so as to select said symbol on said key, corresponding to the subgroup associated with said portion of said user's finger (see figures 16-19 and column 22, line 66 - column 24, line 28).

UNITED STATES NATIONAL STAGE WORKSHEET (DO/EO)

CHARITTA BURT, PAS

U. S. Application No. 10/553575 345/267B

Publication Date 11.4.04

Publication No. WO 2004, 095414 ; U.S. Only yes ___ No ✓

International Application No PCT/US2004, 012082 Language English

Priority Document US number 60/463844 date 4.18.03 More PD's see IA ✓

Correspondence Info 39600 PCT/RO/101 ___

Residence city _____ state/country _____ citizenship _____

Copy in International Application: yes ✓ No Translation ___ Spec pages 234 claim pages 1 Abstract 1

371 Filing Fees: paid ✓ insufficient ___

Total Claims 1 Chargeable 1 Independent 1 Multiple ___ Original claims replaced by Art.34 ___

Total Drawing Sheets 8 foreign text ___

Oath/Declaration: signed ___ unsigned ___ defective ___ completed _____

Power of Attorney ___

Small entity ___ Documentation: yes ___ no ___

Biochemical Seq. Diskette: missing ___ error report ___ entered date _____

Biochemical Seq. listing: missing ___ statement ___ no statement ___

Copy of ISR US references ___

Copy of IPRE US annexes ___ not entered ___

Article 19 Amendment: entered ___ not entered ___

Preliminary Amendment ___ dated _____

IDS ✓ dated 10.17.05

Request for Immediate Examination ✓

Substitute Specification ✓ Dated 10.17.05

Assignment ___

Date Completion USC 371 Requirements 10.17.05 /

Notice of Missing Requirements 07.25.06 /

35 USC Receipts of Request _____ /

Notice of Defective Response _____ /

Notice of Acceptance _____ /

Notice of Abandonment _____ /

Notice regarding CRF Disk _____ /

Notes:

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PATENT APPLICATION SERIAL NO. _____

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE
FEE RECORD SHEET

10/26/2005 LLANDGRA 00000048 10553575

01 FC:2631	150.00	OP
02 FC:2633	100.00	OP
03 FC:2632	250.00	OP
04 FC:2615	300.00	OP
05 FC:2614	200.00	OP
06 FC:1206	500.00	OP

Adjustment date: 07/26/2006 CBURT1
10/26/2005 LLANDGRA 00000048 10553575
03 FC:2632 -250.00 OP

~~07/26/2006 CBURT1 00000001 10553575~~

~~01 FC:2642 200.00 OP~~

PTO-1556
(5/87)

~~Void date: 07/26/2006 CBURT1~~
~~07/26/2006 CBURT1 00000001 10553575~~
~~01 FC:2642 -200.00 OP~~

Repln. Ref: 07/26/2006 CBURT1 0015222100
DAN:192825 Name/Number:10553575
FC: 9204 $200.00 CR

Adjustment date: 07/26/2006 CBURT1
10/26/2005 LLANDGRA 00000048 10553575
06 FC:1206 -500.00 OP

Repln. Ref: 07/26/2006 CBURT1 0014574900
DAN:192825 Name/Number:10553575
FC: 9204 $50.00 CR

07/26/2006 CBURT1 00000004 192825 10553575

01 FC:2633 100.00 DA
Adjustment date: 07/26/2006 CBURT1
10/26/2005 LLANDGRA 00000048 10553575
02 FC:2633 -100.00 OP

07/26/2006 CBURT1 00000003 192825 10553575
07/26/2006 CBURT1 00000002 10553575
01 FC:2601 125.00 DA 500.00 OP
01 FC:2641 50.00 OP

Repln. Ref: 07/26/2006 CBURT1 0015173000
DAN:192825 Name/Number:10553575
FC: 9204 $50.00 CR

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PATENT APPLICATION FEE DETERMINATION RECORD
Effective December 8, 2004

Application or Docket Number: 10/553575

CLAIMS AS FILED - PART I

	(Column 1)	(Column 2)
U.S. NATIONAL STAGE FEES		
BASIC FEE	SMALL ENT. = $ 150	LARGE ENT. = $ 300
EXAMINATION FEE	Satisfies PCT Article 33(1)-(4) = $ 50 / $ 100	All other situations = $ 100 / $ 200
SEARCH FEE	U.S. is ISA = $ 50 / $ 100 ALL other countries = $ 200 / $ 400	All other situations = $ 250 / $ 500
FEE FOR EXTRA SPEC. PGS.	317 minus 100 =	217 / 50 =
TOTAL CHARGEABLE CLAIMS	1 minus 20 =	*
INDEPENDENT CLAIMS	1 minus 3 =	*
MULTIPLE DEPENDENT CLAIM PRESENT		☐

* If the difference in column 1 is less than zero, enter "0" in column 2

SMALL ENTITY TYPE ☐ OR OTHER THAN SMALL ENTITY

RATE	FEE	OR	RATE	FEE
BASIC FEE	150	OR	BASIC FEE	
EXAM. FEE	100		EXAM. FEE	
SEARCH FEE	200		SEARCH FEE	
X $ 125 =			X $ 250 =	
X $ 25 =	—	OR	X $ 50 =	
X $ 100 =	—	OR	X $ 200 =	
+ $ 180 =	—	OR	+ $ 360 =	
TOTAL		OR	TOTAL	

CLAIMS AS AMENDED - PART II

AMENDMENT A

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				☐

SMALL ENTITY OR OTHER THAN SMALL ENTITY

RATE	ADDI-TIONAL FEE	OR	RATE	ADDI-TIONAL FEE
X $ 25 =		OR	X $ 50 =	
X $ 100 =		OR	X $ 200 =	
+ $ 180 =		OR	+ $ 360 =	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

AMENDMENT B

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				☐

RATE	ADDI-TIONAL FEE	OR	RATE	ADDI-TIONAL FEE
X $ 25 =		OR	X $ 50 =	
X $ 100 =		OR	X $ 200 =	
+ $ 180 =		OR	+ $ 360 =	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than '20', enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than '3', enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

FORM PTO-875 (Rev. 02/2005) Patent and Trademark Office - U.S. DEPARTMENT OF COMMERCE

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C. Burt

MULTIPLE DEPENDENT CLAIM FEE CALCULATION SHEET
(FOR USE WITH FORM PTO-875)

SERIAL NO. | FILING DATE

APPLICANT(S)

CLAIMS

	AS FILED		AFTER 1ST AMENDMENT		AFTER 2ND AMENDMENT	
	IND.	DEP.	IND.	DEP.	IND.	DEP.
1	1					
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TOTAL IND.	1	↓		↓		↓
TOTAL DEP.	0	←		←		←
TOTAL CLAIMS	1					

	AS FILED		AFTER 1ST AMENDMENT		AFTER 2ND AMENDMENT	
	IND.	DEP.	IND.	DEP.	IND.	DEP.
51						
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TOTAL DEP.		←		←		←
TOTAL CLAIMS						

PTO - 1360 (REV. 11/84)

U.S. DEPARTMENT of COMMERCE
Patent and Trademark Office

Charitte Brunt

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

U.S. APPLICATION NUMBER NO.	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
10/553,575	Benjamin Firooz Ghassabian	676-025US

INTERNATIONAL APPLICATION NO.	
PCT/US04/12082	
I.A. FILING DATE	PRIORITY DATE
04/19/2004	04/18/2003

39600
SOFER & HAROUN LLP.
317 MADISON AVENUE, SUITE 910
NEW YORK, NY 10017

CONFIRMATION NO. 7464
371 FORMALITIES LETTER

OC000000019755216

Date Mailed: 07/26/2006

NOTIFICATION OF MISSING REQUIREMENTS UNDER 35 U.S.C. 371 IN THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US)

The following items have been submitted by the applicant or the IB to the United States Patent and Trademark Office as a Designated / Elected Office (37 CFR 1.495).

- Indication of Small Entity Status
- Copy of the International Application filed on 10/17/2005
- Copy of the International Search Report filed on 10/17/2005
- Copy of IPE Report filed on 10/17/2005
- Information Disclosure Statements filed on 10/17/2005
- Request for Immediate Examination filed on 10/17/2005
- U.S. Basic National Fees filed on 10/17/2005
- Substitute Specification filed on 10/17/2005
- Priority Documents filed on 10/17/2005
- Specification filed on 10/17/2005
- Claims filed on 10/17/2005
- Abstracts filed on 10/17/2005
- Drawings filed on 10/17/2005

The applicant needs to satisfy supplemental fees problems indicated below.

The following items **MUST** be furnished within the period set forth below in order to complete the requirements for acceptance under 35 U.S.C. 371:

- Oath or declaration of the inventors, in compliance with 37 CFR 1.497(a) and (b), identifying the application by the International application number and international filing date.

- To avoid abandonment, a surcharge (for late submission of filing fee, search fee, examination fee or oath or declaration) as set forth in 37 CFR 1.492(h) of $65 for a small entity in compliance with 37 CFR 1.27, must be submitted with the missing items identified in this letter.

SUMMARY OF FEES DUE:

Total additional fees required for this application is **$-435** for a Small Entity:

- **$65** Surcharge.

(A previous payment of **$500** will be applied to the additional fees indicated above.)

ALL OF THE ITEMS SET FORTH ABOVE MUST BE SUBMITTED WITHIN TWO (2) MONTHS FROM THE DATE OF THIS NOTICE OR BY 32 MONTHS FROM THE PRIORITY DATE FOR THE APPLICATION, WHICHEVER IS LATER. FAILURE TO PROPERLY RESPOND WILL RESULT IN ABANDONMENT.

The time period set above may be extended by filing a petition and fee for extension of time under the provisions of 37 CFR 1.136(a).

Applicant is reminded that any communications to the United States Patent and Trademark Office must be mailed to the address given in the heading and include the U.S. application no. shown above (37 CFR 1.5)

*A copy of this notice **MUST** be returned with the response.*

CHARITTA A BURT

Telephone: (703) 308-9140 EXT 207

PART 2 - OFFICE COPY

U.S. APPLICATION NUMBER NO.	INTERNATIONAL APPLICATION NO.	ATTY. DOCKET NO.
10/553,575	PCT/US04/12082	676-025US

FORM PCT/DO/EO/905 (371 Formalities Notice)

IAP15 Rec'd PCT/PTO 2 6 SEP 2006

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SOFER & HAROUN, LLP
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317 Madison Avenue, Suite 910
New York, NY 10017
Tel: (212) 697-2800 Fax: (212) 697-3004

Facsimile Coversheet

To:	Mail Stop Missing Parts Commissioner for Patents	**Date:**	September 26, 2006
Fax:	571 273 8300	**Page**	8, including this cover sheet
From:	Valentina Papraniku Paralegal		

Re: **RESPONSE TO MISSING REQUIREMENTS**
U.S. Patent Application No.: 10/553,575
For: SYSTEMS TO ENHANCED DATA ENTRY IN MOBILE AND FIXED ENVIRONMENT
Our File No.: 676-025US

Confidentiality Statement
This transmission may contain information which is legally privileged or otherwise protected from disclosure. Its contents are confidential and intended for the addressee only, and must not be used, copied or disseminated by any person other than the addressee. The recipient is requested to notify the sender immediately of any error in transmission and to destroy any transmission not intended for the recipient.

PAGE 1/9 * RCVD AT 9/26/2006 4:03:33 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-2/13 * DNIS:2738300 * CSID:212 697 3004 * DURATION (mm-ss):02-34

PTO/SB/97 (09-04)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
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676-0254S

on 9/26/06
Date

Signature

VALENTINA PAPRANIKU
Typed or printed name of person signing Certificate

—
Registration Number, if applicable

212-697-2800
Telephone Number

Note: Each paper must have its own certificate of transmission, or this certificate must identify each submitted paper.

Copy of Notice of Missing requirements under 35 U.S.C 371
Response to Missing requirements
Executed Declaration

This collection of information is required by 37 CFR 1.8. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1.8 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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SEP 2 6 2006

Attorney Docket No.: 676-025US Patent

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of	:
Ghassabian	:
Serial No.: 10/553,575	:
	:
Filed: October 17, 2005	:
	:
For: SYSTEMS TO ENHANCED DATA ENTRY IN...:	

RESPONSE TO NOTICE TO FILE MISSING PARTS

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

S I R:

Enclosed with this Response is a copy of the Notice To File Missing Requirements, and an executed declaration.

Any additional fees required in connection with this application may be charged to Deposit Account No. 19-2825, Order No 676-025us.:

Respectfully submitted,
SOFER & HAROUN, LLP

By: _____
Joseph Sofer
Reg. No.34,438
317 Madison Avenue, Suite 910
New York, New York 10017
(212) 697-2800

Dated: September 26, 2006

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SEP 26 2006

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

U.S. APPLICATION NUMBER NO.	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
10/553,575	Benjamin Firooz Ghassabian	676-025US

INTERNATIONAL APPLICATION NO.	
PCT/US04/12082	
I.A. FILING DATE	PRIORITY DATE
04/19/2004	04/18/2003

39600
SOFER & HAROUN LLP.
317 MADISON AVENUE, SUITE 910
NEW YORK, NY 10017

CONFIRMATION NO. 7464
371 FORMALITIES LETTER

OC0000000019755216

Date Mailed: 07/26/2006

NOTIFICATION OF MISSING REQUIREMENTS UNDER 35 U.S.C. 371 IN THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US)

The following items have been submitted by the applicant or the IB to the United States Patent and Trademark Office as a Designated / Elected Office (37 CFR 1.495).



- Indication of Small Entity Status
- Copy of the International Application filed on 10/17/2005
- Copy of the International Search Report filed on 10/17/2005
- Copy of IPE Report filed on 10/17/2005
- Information Disclosure Statements filed on 10/17/2005
- Request for Immediate Examination filed on 10/17/2005
- U.S. Basic National Fees filed on 10/17/2005
- Substitute Specification filed on 10/17/2005
- Priority Documents filed on 10/17/2005
- Specification filed on 10/17/2005
- Claims filed on 10/17/2005
- Abstracts filed on 10/17/2005
- Drawings filed on 10/17/2005

The applicant needs to satisfy supplemental fees problems indicated below.

The following items **MUST** be furnished within the period set forth below in order to complete the requirements for acceptance under 35 U.S.C. 371:

- Oath or declaration of the inventors, in compliance with 37 CFR 1.497(a) and (b), identifying the application by the International application number and international filing date.
- To avoid abandonment, a surcharge (for late submission of filing fee, search fee, examination fee or oath or declaration) as set forth in 37 CFR 1.492(h) of $65 for a small entity in compliance with 37 CFR 1.27, must be submitted with the missing items identified in this letter.

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SUMMARY OF FEES DUE:

Total additional fees required for this application is $435 for a Small Entity:

- $65 Surcharge.

(A previous payment of $500 will be applied to the additional fees indicated above.)

ALL OF THE ITEMS SET FORTH ABOVE MUST BE SUBMITTED WITHIN TWO (2) MONTHS FROM THE DATE OF THIS NOTICE OR BY 32 MONTHS FROM THE PRIORITY DATE FOR THE APPLICATION, WHICHEVER IS LATER. FAILURE TO PROPERLY RESPOND WILL RESULT IN ABANDONMENT.

The time period set above may be extended by filing a petition and fee for extension of time under the provisions of 37 CFR 1.136(a).

Applicant is reminded that any communications to the United States Patent and Trademark Office must be mailed to the address given in the heading and include the U.S. application no. shown above (37 CFR 1.5)

*A copy of this notice **MUST** be returned with the response.*

CHARITTA A BURT

Telephone: (703) 308-9140 EXT 207

PART 1 - ATTORNEY/APPLICANT COPY

U.S. APPLICATION NUMBER NO.	INTERNATIONAL APPLICATION NO.	ATTY. DOCKET NO.
10/553,575	PCT/US04/12082	676-025US

FORM PCT/DO/EO/905 (371 Formalities Notice)

10/02/2006 GFREY1 00000180 192825 10553575
01 FC:2617 65.00 DA

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SOFER & HAROUN, L.L.P. *Attorney Docket: 676-025us*

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

COMBINED DECLARATION, POWER OF ATTORNEY & PETITION

TYPE OF DECLARATION

[ ] Utility
[ ] Design
[ ] Supplemental
[ ] Divisional
[ ] Continuation
[ ] Continuation-in-part
[X] National Stage of the PCT

INVENTORSHIP AND SPECIFICATION IDENTIFICATION

My residence, post office address and citizenship are as stated below next to my name; I believe I am the original, first and sole inventor (if only one is listed below) or a joint inventor (if plural inventors are named below) for which a patent is sought on the design entitled:

SYSTEMS TO ENHANCE DATA ENTRY IN MOBILE AND FIXED ENVIRONMENT

as described and claimed in the specification which
[ ] is attached hereto.
[x] was filed on April 19, 2004
[ ] as U.S. Serial Number. _____; or
[ ] Express Mail No._____ (as serial number not yet known); and
[ ] was amended on _____.
[ ] was described and claimed in PCT International Application No. PCT/ /_____ filed on _____; and
☐ as amended under PCT Article 19 and/or 34 on _____.

REVIEW OF PAPERS AND DUTY OF CANDOR

I have reviewed and understand the contents of the attached specification including the drawing and claims as amended by any amendment referred to below; and
I acknowledge my duty to disclose information of which I am aware which is material to the examination of this application, in accordance with 37 CFR 1.56(a); and
☐ in compliance with this duty there is attached an information disclosure statement.

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SEP 2 6 2006

SOFER & HAROUN, L.L.P. *Attorney Docket: 676-025us*

PRIORITY CLAIMS

I hereby claim **foreign priority** benefits under Title 35, United States Code, § 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign applications for patent applications for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s) Claimed			Priority	
_____	_____	_____	[X]	[ ]
(Number)	(Country)	(Day/Month/Year/Filed)	Yes	No
_____	_____	_____	[ ]	[ ]
(Number)	(Country)	(Day/Month/Year/Filed)	Yes	No
_____	_____	_____	[ ]	[ ]
(Number)	(Country)	(Day/Month/Year/Filed)	Yes	No

I hereby claim the benefit under Title 35, United States Code, § 120 of any **United States Application(s)** listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States Application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, § 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

60/463,844	4/18/2003	
(Application Serial No.)	(Filing Date)	(Status: Patented, Pending, Abandoned)
60/466,594	4/30/2003	
(Application Serial No.)	(Filing Date)	(Status: Patented, Pending, Abandoned)
60/468,028	5/5/2003	
(Application Serial No.)	(Filing Date)	(Status: Patented, Pending, Abandoned)
60/474,447	5/30/2003	
(Application Serial No.)	(Filing Date)	(Status: Patented, Pending, Abandoned)

(Application Serial No.)	(Filing Date)	(Status: Patented, Pending, Abandoned)
60/475,533	6/3/2003	
60/482,706	6/26/2003	
60/482,998	6/27/2003	
60/496,702	8/20/2003	
60/500,602	9/5/2003	
60/504,331	9/19/2003	
60/510,885	10/14/2003	
60/536,564	1/14/2004	
60/552,968	3/11/2004	
60/557,140	3/26/2004	

DECLARATION

I declare that all statements made above of my own knowledge are true and all statements made on information and belief are believed to be true; and these statements were made with

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SEP 2 6 2006

the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

POWER OF ATTORNEY

I hereby appoint the following patent attorneys and/or patent agent(s) with full power of appointment, substitution and revocation to prosecute this application, to make alterations and amendments thereto, to receive the patent, and to transact all business in the Patent Office connected therewith.

Joseph Sofer (Reg. No. 34,438)
Robert M. Haroun (Reg. No. 34,345)

Please address all telephone calls and correspondence to:

Joseph Sofer
SOFER & HAROUN, L.L.P.
317 Madison Avenue
Suite 910
New York, New York 10017
Telephone:(212) 697-2800
Facsimile:(212) 697-3004

PETITION

Wherefore, I pray that Letters Patent be granted to me for the invention or discovery described and claimed in the above-mentioned specification and claims, and I hereby subscribe my name to the foregoing Declaration, Power of Attorney & Petition with references to the above-identified specification and claims.

SIGNATURES

Name of inventor: Benjamin, Firooz Ghassabian
Home Address: 11 Locust Cove Lane, Great Neck, NY 11024
Post Office Address: The Same

Citizenship: French

Inventor's Signature: _____ **Date:** August 9th, 2006

BEST AVAILABLE COPY

UNITED STATES NATIONAL STAGE WORKSHEET (DO/EO)
CHARITTA BURT, PAS

U. S. Application No. 10/553575 345/267B

Publication Date 11.4.04

Publication No. WO 2004, 095414 ; U.S. Only yes ___ No ✓

International Application No PCT/US2004, 012082 Language English

Priority Document US number 60/463844 date 4.18.03 More PD's see IA ✓

Correspondence Info 39600 PCT/RO/101 ___

Residence city ___ state/country ___ citizenship ___

Copy in International Application: yes ✓ No Translation ___ Spec pages 234 claim pages 1 Abstract 1

371 Filing Fees: paid ✓ insufficient ___

Total Claims 1 Chargeable 1 Independent 1 Multiple ___ Original claims replaced by Art.34 ___

Total Drawing Sheets 8 foreign text ___

Oath/Declaration: signed ___ unsigned ___ defective ___ completed ___

Power of Attorney ___

Small entity ___ Documentation: yes ___ no ___

Biochemical Seq. Diskette: missing ___ error report ___ entered date ___

Biochemical Seq. listing: missing ___ statement ___ no statement ___

Copy of ISR US references ___

Copy of IPRE US annexes ___ not entered ___

Article 19 Amendment: entered ___ not entered ___

Preliminary Amendment ___ dated ___

IDS ✓ dated 10-17-05

Request for Immediate Examination ✓

Substitute Specification ✓ Dated 10.17.05

Assignment ___

Date Completion USC 371 Requirements 10.17.05

Notice of Missing Requirements 07.25.06

35 USC Receipts of Request 09-26-06

Notice of Defective Response ___

Notice of Acceptance ___

Notice of Abandonment ___

Notice regarding CRF Disk ___

Notes:

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
10/553,575	09/26/2006	2629	1490	676-025US	1	1

CONFIRMATION NO. 7464

39600
SOFER & HAROUN LLP.
317 MADISON AVENUE, SUITE 910
NEW YORK, NY10017

FILING RECEIPT

Date Mailed: 05/10/2007

Receipt is acknowledged of this regular Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please mail to the Commissioner for Patents P.O. Box 1450 Alexandria Va 22313-1450. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).**

Applicant(s)

Benjamin Firooz Ghassabian, Great Neck, NY;

Power of Attorney: The patent practitioners associated with Customer Number 39600

Domestic Priority data as claimed by applicant

This application is a 371 of PCT/US04/12082 04/19/2004
which claims benefit of 60/463,844 04/18/2003
and claims benefit of 60/466,594 04/30/2003
and claims benefit of 60/468,028 05/05/2003
and claims benefit of 60/474,447 05/30/2003
and claims benefit of 60/475,533 06/03/2003
and claims benefit of 60/482,706 06/26/2003
and claims benefit of 60/482,998 06/27/2003
and claims benefit of 60/500,602 09/05/2003
and claims benefit of 60/504,331 09/19/2003
and claims benefit of 60/510,885 10/14/2003
and claims benefit of 60/536,564 01/14/2004
and claims benefit of 60/552,968 03/11/2004
and claims benefit of 60/557,140 03/26/2004
and claims benefit of 60/496,702 08/20/2003

Foreign Applications

If Required, Foreign Filing License Granted: 03/24/2007

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US10/553,575**

Projected Publication Date: 08/16/2007

Non-Publication Request: No

Early Publication Request: No

** SMALL ENTITY **

Title

Systems to enhance data entry in mobile and fixed environment

Preliminary Class

345

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a

license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

U.S. APPLICATION NUMBER NO.	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
10/553,575	Benjamin Firooz Ghassabian	676-025US

INTERNATIONAL APPLICATION NO.	
PCT/US04/12082	
I.A. FILING DATE	PRIORITY DATE
04/19/2004	04/18/2003

39600
SOFER & HAROUN LLP.
317 MADISON AVENUE, SUITE 910
NEW YORK, NY 10017

CONFIRMATION NO. 7464

371 ACCEPTANCE LETTER

OC000000023766501

Date Mailed: 05/10/2007

NOTICE OF ACCEPTANCE OF APPLICATION UNDER 35 U.S.C 371 AND 37 CFR 1.495

The applicant is hereby advised that the United States Patent and Trademark Office in its capacity as a Designated / Elected Office (37 CFR 1.495), has determined that the above identified international application has met the requirements of 35 U.S.C. 371, and is ACCEPTED for national patentability examination in the United States Patent and Trademark Office.

The United States Application Number assigned to the application is shown above and the relevant dates are:

09/26/2006	09/26/2006
DATE OF RECEIPT OF 35 U.S.C. 371(c)(1), (c)(2) and (c)(4) REQUIREMENTS	DATE OF COMPLETION OF ALL 35 U.S.C. 371 REQUIREMENTS

A Filing Receipt (PTO-103X) will be issued for the present application in due course. **THE DATE APPEARING ON THE FILING RECEIPT AS THE " FILING DATE" IS THE DATE ON WHICH THE LAST OF THE 35 U.S.C. 371 (c)(1), (c)(2) and (c)(4) REQUIREMENTS HAS BEEN RECEIVED IN THE OFFICE. THIS DATE IS SHOWN ABOVE.** *The filing date of the above identified application is the international filing date of the international application (Article 11(3) and 35 U.S.C. 363).* Once the Filing Receipt has been received, send all correspondence to the Group Art Unit designated thereon.

The following items have been received:

- Indication of Small Entity Status
- Copy of the International Application filed on 10/17/2005
- Copy of the International Search Report filed on 10/17/2005
- Copy of IPE Report filed on 10/17/2005
- Information Disclosure Statements filed on 10/17/2005
- Oath or Declaration filed on 09/26/2006
- Request for Immediate Examination filed on 10/17/2005
- U.S. Basic National Fees filed on 10/17/2005
- Substitute Specification filed on 10/17/2005
- Priority Documents filed on 10/17/2005
- Specification filed on 10/17/2005

- Claims filed on 10/17/2005
- Abstracts filed on 10/17/2005
- Drawings filed on 10/17/2005

Applicant is reminded that any communications to the United States Patent and Trademark Office must be mailed to the address given in the heading and include the U.S. application no. shown above (37 CFR 1.5)

DARLENE PROCTOR
Telephone: (703) 308-9290 EXT 115

PART 3 - OFFICE COPY

FORM PCT/DO/EO/903 (371 Acceptance Notice)

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(c) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
10/553,575	09/26/2006	Benjamin Firooz Ghassabian	676-025US

CONFIRMATION NO. 7464

39600
SOFER & HAROUN LLP.
317 MADISON AVENUE, SUITE 910
NEW YORK, NY10017

Title: Systems to enhance data entry in mobile and fixed environment

Publication No. US-2007-0188472-A1
Publication Date: 08/16/2007

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently http://pair.uspto.gov/. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Pre-Grant Publication Division, 703-605-4283

PTO/SB/82 (01-06)
Approved for use through 12/31/2008. OMB 0651-0035
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

REVOCATION OF POWER OF ATTORNEY WITH NEW POWER OF ATTORNEY AND CHANGE OF CORRESPONDENCE ADDRESS

Application Number	10553575
Filing Date	9/28/2006
First Named Inventor	F. GHASSABIAN
Art Unit	
Examiner Name	
Attorney Docket Number	GHASSABIAN12

I hereby revoke all previous powers of attorney given in the above-identified application.

☐ A Power of Attorney is submitted herewith.

OR

☑ I hereby appoint the practitioners associated with the Customer Number: 01444

☑ Please change the correspondence address for the above-identified application to:

☑ The address associated with Customer Number: 01444

OR

☐ Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

I am the:

☑ Applicant/Inventor.

☐ Assignee of record of the entire interest. See 37 CFR 3.71.
Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)

SIGNATURE of Applicant or Assignee of Record

Signature			
Name	Firooz GHASSABIAN		
Date	April 9, 2008	Telephone	

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*

☐ *Total of ____ forms are submitted.

This collection of information is required by 37 CFR 1.36. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: **Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

09-APR-2008 16:19 From: To:RCG 03 5606405 P.4

Electronic Acknowledgement Receipt

EFS ID:	3669590
Application Number:	10553575
International Application Number:	
Confirmation Number:	7464
Title of Invention:	Systems to enhance data entry in mobile and fixed environment
First Named Inventor/Applicant Name:	Benjamin Firooz Ghassabian
Customer Number:	39600
Filer:	Roger Lowen Browdy/Erin Geraghty
Filer Authorized By:	Roger Lowen Browdy
Attorney Docket Number:	676-025US
Receipt Date:	24-JUL-2008
Filing Date:	26-SEP-2006
Time Stamp:	12:33:44
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes) /Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	executedpower.pdf	61390 30d6ccf2378545a9d92d215b2fe0e714c6e765cb	no	1

Warnings:	
Information:	

Total Files Size (in bytes):	61390

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
10/553,575	09/26/2006	Benjamin Firooz Ghassabian	GHASSABIAN12

CONFIRMATION NO. 7464

1444
BROWDY AND NEIMARK, P.L.L.C.
624 NINTH STREET, NW
SUITE 300
WASHINGTON, DC 20001-5303

POA ACCEPTANCE LETTER

OC00000031270127

Date Mailed: 07/30/2008

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 07/24/2008.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/mteklemichael/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
10/553,575	09/26/2006	Benjamin Firooz Ghassabian	676-025US

CONFIRMATION NO. 7464

39600
SOFER & HAROUN LLP.
317 MADISON AVENUE, SUITE 910
NEW YORK, NY 10017

POWER OF ATTORNEY NOTICE

OC000000031270115

Date Mailed: 07/30/2008

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 07/24/2008.

- The Power of Attorney to you in this application has been revoked by the applicant. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

/mteklemichael/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,575	09/26/2006	Benjamin Firooz Ghassabian	GHASSABIAN12	7464

1444 7590 08/07/2008

BROWDY AND NEIMARK, P.L.L.C.
624 NINTH STREET, NW
SUITE 300
WASHINGTON, DC 20001-5303

EXAMINER	
LAM, VINH TANG	

ART UNIT	PAPER NUMBER
2629	

MAIL DATE	DELIVERY MODE
08/07/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/553,575	GHASSABIAN, BENJAMIN FIROOZ	
	Examiner	Art Unit	
	VINH T. LAM	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *1* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 September 2006*.

2a)☐ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-32* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group **1**, claim(s) **1**-**4**, drawn to a first method includes combining information corresponding to said word, wherein said combined information includes: a first information including entering at least one character such as a letter of said word through said procedure of input, and a second information including providing the input signals corresponding to at least some of the other characters of said word without providing speech

Group **2**, claim(s) **5**-**16** drawn to a procedure of input including: providing said at least one input signal; and providing a speech information corresponding to said symbol for selecting said symbol among the symbols that are represented by said at least one input signal.

Group **3**, claim(s) **17**-**23** drawn to the input means to which substantially all of said letters of a language are assigned are arranged such that one finger tip of said user may touch substantially all of them simultaneously.

Group **4**, claim(s) **24**-**29** drawn to the input means to which said letters are assigned are split into two groups wherein each group is used by the finger of a different user's hand.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VINH T. LAM whose telephone number is (571)270-3704. The examiner can normally be reached on M-F (7:30-5:00) EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on 571 272 1206. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/VTL/

/Amare Mengistu/
Supervisory Patent Examiner, Art Unit 2629

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10553575	GHASSABIAN, BENJAMIN FIROOZ
	Examiner	Art Unit
	VINH T LAM	2629

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	07/30/2008								
	1	÷								
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	31	÷								
	32	÷								

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10553575	GHASSABIAN, BENJAMIN FIROOZ
	Examiner	Art Unit
	VINH T LAM	2629

SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
Search Inventors. No ODP.	7/30/2008	Vinh Lam

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Atty. Docket: GHASSABIAN 12

In re Application of:	)	Conf. No.: 7464
Benjamin Firooz GHASSABIAN et al.	)	Art Unit: 2629
Appln. No.: 10/553,575	)	Examiner: V. T. LAM
Filing Date: September 26, 2006	)	Washington D.C.
For: SYSTEMS TO ENHANCE DATA ENTRY IN MOBILE AND FIXED ENVIRONMENT	)	February 9, 2009

RESPONSE TO RESTRICTION REQUIREMENT:
AMENDMENT AND REMARKS

U.S. Patent and Trademark Office
Customer Service Window
Randolph Building, Mail Stop **Amendment**
401 Dulany Street
Alexandria, VA 22314

Sir:

In response to the restriction requirement mailed on August 7, 2008, petition for five-month's extension of time and late fee being paid online, kindly amend as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks begin on page 13.

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Withdrawn) A data entry system comprising;

a number of predefined input signals provided by interacting with the input means of an object, including predefined types of interaction provided with a number of keys, such as physical or virtual keys, corresponding to an electronic device for at least entering arbitrary characters wherein,

said data entry system uses a number of symbols including at least the letters of the alphabet of at least one language and wherein said symbols are assigned to said input signals such that at least two of said letters are assigned to at least one of said input signals, and wherein a symbol assigned to an input signal is entered by a procedure of input including:

providing said input signal; and

providing a speech information corresponding to said symbol for selecting said symbol among the symbols that are assigned to said input signal, wherein said speech information is detected and analyzed based on at least one of, a user's voice and a user's lip movements, and wherein said data entry system uses at least one database of words such that in order to enter a word of said a least one database a user uses one of at least a first and a second methods of input wherein,

a first method includes combining information corresponding to said word, wherein said combined information includes:

a first information including entering at least one character such as a letter of said word through said procedure of input, and

a second information including providing the input signals corresponding to at least some of the other characters of said word without providing speech; and

said second method including providing information including the input signals corresponding to substantially all of the characters of said word without providing a speech, wherein the system compares said information with the information corresponding to the words of said database and proposes a corresponding word.

2. (Withdrawn) The data entry system according to claim 1, wherein at least the letters having ambiguously resembling speech are assigned separately from each other to different input signals.

3. (Withdrawn) The data entry system according to claim 1, wherein a symbol such as a character other than a letter may be entered by providing a predefined type of interaction with said input signal without speaking.

4. (Withdrawn) The data entry system according to claim 1, wherein substantially all of said letters are assigned to four of said input signals.

5. (Withdrawn) A data entry system comprising:

a number of predefined input signals provided by interacting with the input means of an object including predefined types of interaction provided with a number of keys, such as physical or virtual keys, corresponding to an electronic device for at least entering arbitrary characters wherein,

said data entry system uses a first type of symbols including at least the letters of the alphabet of at least one language and a second type of symbols substantially each including a portion of a word, such as a chain of characters generally corresponding to a

Samsung Exhibit 1006, Page 622 of 1063

syllable of a word of a language, wherein said symbols correspond to said input signals such that at least two of said letters are assigned to at least one of said input signals, and wherein a symbol corresponding to said at least one input signal is entered by a procedure of input including:

providing said at least one input signal; and

providing a speech information corresponding to said symbol for selecting said symbol among the symbols that are represented by said at least one input signal wherein said speech information is detected and analyzed based on at least one of, a user's voice and a user's lip movements.

6. (Withdrawn) The data entry system according to claim 5, wherein said data entry system uses a number of words wherein each of said words includes at least one of said symbols such that in order to enter one of said words a user provides information corresponding to the symbols of said word through said procedure of input.

7. (Withdrawn) The data entry system according to claim 5, wherein said data entry system uses a number of words wherein each of said words is composed of at least one of said symbols, wherein in order to enter one of said words a user provides a combined information corresponding to said word, wherein said combined information includes:

a first type of information including entering precisely at least one of the symbol of said word through said procedure of input; and

a second type of information including providing the input signals corresponding to at least some of the other characters of said word without providing a corresponding speech.

8. (Withdrawn) The data entry system according to claim 5, wherein said at least some of the other characters of said word is substantially all of the other characters of said word.

9. (Withdrawn) The data entry system according to claim 5, wherein said providing at least an input signal corresponding to a symbol of the second types of symbols is providing an input signal corresponding to a character, generally the beginning character, of said symbol and speaking said symbol.

10. (Withdrawn) The data entry system according to claim 5, wherein said providing at least one input signal corresponding to a symbol of the second types of symbols is providing the input signals corresponding to substantially all of the characters of said symbol and speaking said symbol.

11. (Withdrawn) The data entry system according to claim 5, wherein said data entry system further comprises a third group of symbols including the complete words of a language, wherein each of said words generally comprises one syllable.

12. (Withdrawn) The data entry system according to claim 5, wherein at least the letters having ambiguously resembling speech are separately from each other assigned to different input signals.

13. (Withdrawn) The data entry system according to claim 5, wherein a symbol such as a character other than a letter may be entered by providing a predefined type of interaction with said input signal without speaking.

14. (Withdrawn) The data entry system according to claim 5, wherein each of two different types of interaction with an input means provides a different input signal, wherein a first input signal corresponds to the entry of a character such as a letter, and a second input signal corresponds to the entry of a portion of a word.

15. (Withdrawn) The data entry system according to claim 5, wherein substantially all of said letters are assigned to four of said input signals.

16. (Withdrawn) The data entry system according to claim 15, wherein said substantially all of said portions of words are represented by said four input signals.

17. (Withdrawn) A data entry system comprising:

a number of predefined input signals provided by interacting with the input means of an object including predefined types of interaction provided with a number of keys such as physical or virtual keys, corresponding to an electronic device, for at least entering arbitrary characters wherein,

said data entry system uses a number of symbols including at least the letters of the alphabet of at least one language and wherein said symbols are assigned to said input signals such that at least two of said letters are assigned to at least one of said input signals and wherein,

said data entry system uses a number of words wherein each of said words includes at least one of said symbols, wherein in order to enter one of said words a user provides at least the input signals corresponding to the symbols of said word and the system compares said sequence of input signals with the input signals corresponding to each of at least some of said words and proposes a corresponding word and wherein,

the input means to which substantially all of said letters of a language are assigned are arranged such that one finger tip of said user may touch substantially all of them simultaneously.

18. (Withdrawn) The data entry system according to claim 17, wherein at least the input means to which said letters are assigned, are split into two groups wherein each group is used by the finger of a different user's hand.

19. (Withdrawn) The data entry system according to claim 17, wherein at least the input means to which said letters are assigned are split into two groups and are disposed on opposite sides of an electronic device.

20. (Withdrawn) The data entry system according to claim 17, wherein further a symbol assigned to an input signal is entered by a procedure of input including;

providing said input signal; and

providing a speech information corresponding to said symbol for selecting said symbol among the symbols that are assigned to said input signal, wherein said speech information is detected and analyzed based on at least one of a user's voice and a user's lip movements.

21. (Withdrawn) The data entry system according to claim 17, wherein further a symbol assigned to an input signal is entered by a procedure of input including:

providing said input signal; and

providing a speech information corresponding to said symbol for selecting said symbol among the symbols that are assigned to said input signal, wherein said speech

information is detected and analyzed based on at least one of a user's voice and a user's lip movements;

and wherein said data entry system uses at least one database of words such that in order to enter a word of said at least one database a user uses one of at least a first and a second methods of input wherein:

a first method of input includes combining information corresponding to said word, where said combined information includes a first information including entering at least one character such as a letter of said word through said procedure of input; and

a second information including providing the input signals corresponding to at least some of the other characters of said word without providing a speech;

a second method of input includes providing information including the input signals corresponding to substantially all of the characters of said word without providing a speech, wherein the system compares said information with the information corresponding to the words of said database and proposes a corresponding word.

22. (Withdrawn) The data entry system according to claim 17, wherein at least the letters having ambiguously resembling speech are separately from each other assigned to different symbols.

23. (Withdrawn) The data entry system according to claim 17, wherein substantially all of said letters are assigned to four of said input signals.

24. (Original) A data entry system comprising:

a number of predefined input signals provided by interacting with the input means of an object including predefined types of interaction provided with a number of keys

such as physical or virtual keys, corresponding to an electronic device for at least entering arbitrary characters wherein,

said data entry system uses a number of symbols including at least the letters of the alphabet of at least one language and wherein said symbols are assigned to said input signals such that at least two of said letters are assigned to at least one of said input signals and wherein,

said data entry system uses a number of words wherein each of said words is composed of at least one of said symbols, wherein in order to enter one of said words a user provides at least the input signals corresponding to the symbols of said word and the system compares said sequence of input signals with the input signals corresponding to each of at least some of said words and proposes a corresponding word and wherein,

at least the input means to which said letters are assigned are split into two groups wherein each group is used by the finger of a different user's hand.

25. (Original) The data entry system according to claim 24, wherein at least the input means to which said letters are assigned are split into two groups and are disposed on opposite sides of an electronic device.

26. (Original) The data entry system according to claim 24, wherein further a symbol assigned to an input signal is entered by a procedure of input including:

providing said input signal; and

providing a speech information corresponding to said symbol for selecting said symbol among the symbols that are assigned to said input signal, wherein said speech information is detected and analyzed based on at least one of a user's voice and a user's lip movements.

27. (Original) The data entry system according to claim 24, wherein a further symbol assigned to an input signal is entered by a procedure of input including:

providing said input signal; and

providing a speech information corresponding to said symbol for selecting said symbol among the symbols that are assigned to said input signal, wherein said speech information is detected and analyzed based on at least one of a user's voice and a user's lip movements; and

wherein said data entry system uses at least one database of words such that in order to enter a word of said a least one database a user uses one of at least a first and a second methods of input, wherein:

a first method of input includes combining information corresponding to said word, wherein said combined information includes:

a first information including entering at least one character such as a letter of said word through said procedure of input; and

a second information including providing the input signals corresponding to at least some of the other characters of said word without providing speech;

a second method o input includes providing information including the input signals corresponding to substantially all of the characters of said word without providing a speech, wherein the system compares said information with the information corresponding to the words of said database and proposes a corresponding word.

28. (Original) The data entry system according to claim 24, wherein at least the letters having ambiguously resembling speech are separately from each other assigned to different input signals.

29. (Original) The data entry system according to claim 24, wherein substantially all of said letters are assigned to four of said input signals.

30. (Original) A data entry system comprising;

a number of predefined input signals provided by interacting with the input means of an object, including predefined types of interaction provided with a number of keys, such as physical or virtual keys, corresponding to an electronic device for at least entering arbitrary characters wherein,

said data entry system uses a first type of text components including at least the letters of the alphabet of at least one language and a second type of text components generally each including a portion of a word, such as a chain of characters generally corresponding to a syllable of a word of a language, wherein said first text components are assigned to said input signals such that at least two of said letters are assigned to at least one of said input signals, and wherein a text component of the second group of text components is entered by a procedure of input including:

providing the input signals corresponding to at least two of its characters; and

providing a speech information corresponding to said text component for selecting said text component among the text components that are represented by said provided input signals, wherein said speech information is detected and analyzed based on at least one of a user's voice and a user's lip movements.

31. (Original) The data entry system according to claim 30, wherein said second group of text components include the word of a language having one syllable.

32. (Original) The data entry system according to claim 30, wherein said second group of text components includes portions of a word, where said portions of a word have more than one syllable.

33. (New) The data entry system according to claim 25, wherein the input means to which the letters are assigned consists of four keys and wherein each of said two groups includes two of said four keys.

34. (New) The data entry system according to claim 33, wherein said data entry system includes a database of words and said letter keys are used in a word predictive text entry system based on key presses corresponding to the letters of a word provided by the user.

REMARKS

Applicant is in receipt of the August 7, 2008, Restriction Requirement. Claims 1-32 presently appear in this case. Claims 1-29 have been subject to a requirement for election of a single invention. The restriction requirement does not appear to restrict claims 30-32, accordingly, these claims have not been withdrawn.

Applicant hereby respectfully and provisionally elects Group 4 (claims 24-29) drawn to the input means to which said letters are assigned are split into two groups wherein each group is used by the finger of a different user's hand, for prosecution on the merits. Additionally, Applicant have added two new claims dependent from elected claim 25.

Applicant respectfully awaits the result of a first examination on the merits. Favorable consideration is respectfully requested.

Respectfully submitted,

BROWDY AND NEIMARK, P.L.L.C.
Attorneys for Applicant(s)

By /Ronni S. Jillions/ _____
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RSJ:ma
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Facsimile No.: (202) 737-3528
\\bnsbs\vol1\BN\C\cohn\ghassabian12\pto\2009-02-09RestrictResponse.doc

Electronic Patent Application Fee Transmittal	
Application Number:	10553575
Filing Date:	26-Sep-2006
Title of Invention:	Systems to enhance data entry in mobile and fixed environment
First Named Inventor/Applicant Name:	Benjamin Firooz Ghassabian
Filer:	Roger Lowen Browdy/Maureen Adams
Attorney Docket Number:	GHASSABIAN12
Filed as Small Entity	

U.S. National Stage under 35 USC 371 Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Claims in excess of 20	2615	2	26	52
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 5 months with $0 paid	2255	1	1175	1175
Miscellaneous:				
		Total in USD ($)		**1227**

Electronic Acknowledgement Receipt

EFS ID:	4758873
Application Number:	10553575
International Application Number:	
Confirmation Number:	7464
Title of Invention:	Systems to enhance data entry in mobile and fixed environment
First Named Inventor/Applicant Name:	Benjamin Firooz Ghassabian
Customer Number:	01444
Filer:	Roger Lowen Browdy/Maureen Adams
Filer Authorized By:	Roger Lowen Browdy
Attorney Docket Number:	GHASSABIAN12
Receipt Date:	09-FEB-2009
Filing Date:	26-SEP-2006
Time Stamp:	15:46:26
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$1227
RAM confirmation Number	1328
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Extension of Time	2009-02-09-GenTransm_ExtTimeAsFiled.pdf	19118 13da4a7bb2701d9ea1a3ba91ac53c862aac85b6e	no	1
Warnings:					
Information:					
2		2009-02-09RestrictResponseAsFiled.pdf	72949 46c01d9c6d1695323866f3d04cba97e251e11b57	yes	13

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Response to Election / Restriction Filed	1	1
	Claims	2	12
	Applicant Arguments/Remarks Made in an Amendment	13	13

Warnings:					
Information:					
3	Fee Worksheet (PTO-06)	fee-info.pdf	31911 2743339cfcc0ef6d16928bc3d938ec36cd1bc0f3	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	123978		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of: Benjamin Firooz GHASSABIAN et al.

Art Unit: 2629

Application No.: 10/553,575 Confirmation No.: 7464

Examiner: V. T. LAM

Filing Date: September 26, 2006

Washington, D.C.

For: SYSTEMS TO ENHANCE DATA ENTRY IN MOBILE AND FIXED ENVIRONMENT

Atty.'s Docket: GHASSABIAN 12

Date: February 9, 2009

U.S. Patent and Trademark Office
Customer Service Window
Randolph Building, Mail Stop **Amendment**
401 Dulany Street
Alexandria, VA 22314

Sir:

Transmitted herewith is a [ ] Amendment [XX] REPLY TO RESTRICTION REQUIREMENT AND AMENDMENT in the above-identified application.

[XX] Small Entity Status: Applicant(s) claim small entity status. See 37 C.F.R. §1.27.

[ ] No additional fee is required.

[XX] The fee has been calculated as shown below:

	(Col. 1)		(Col. 2)	(Col. 3)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NO. PREVIOUSLY PAID FOR	PRESENT EXTRA EQUALS	RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
TOTAL	* 34	MINUS	** 32	2	x 26	$ 52.00		x 52	$
INDEP.	* 5	MINUS	*** 5	0	x 110	$		x 220	$
FIRST PRESENTATION OF MULTIPLE DEP. CLAIM					+ 195	$		+ 390	$
					ADDITIONAL FEE TOTAL	$ 52.00	OR	TOTAL	$

* If the entry in Col. 1 is less than the entry in Col. 2, write "0" in Col. 3.

** If the "Highest Number Previously Paid for" IN THIS SPACE is less than 20, write "20" in this space.

*** If the "Highest Number Previously Paid for" IN THIS SPACE is less than 3, write "3" in this space.

The "Highest Number Previously Paid For" (total or independent) is the highest number found from the equivalent box in Col. 1 of a prior amendment of the number of claims originally filed.

[XX] Conditional Petition for Extension of Time

If any extension of time for a response is required, applicant requests that this be considered a petition therefor.

[XX] It is hereby petitioned for an extension of time in accordance with 37 CFR 1.136(a). The appropriate fee required by 37 CFR 1.17 is calculated as shown below:

Small Entity			Other Than Small Entity		
Response Filed Within			Response Filed Within		
[ ]	First	- $ 65.00	[ ]	First	- $ 130.00
[ ]	Second	- $ 245.00	[ ]	Second	- $ 490.00
[ ]	Third	- $ 555.00	[ ]	Third	- $ 1110.00
[ ]	Fourth	- $865.00	[ ]	Fourth	- $ 1730.00
[XX]	Fifth	$1175.00	[ ]	Fifth	- $ 2350.00
Month After Time Period Set			Month After Time Period Set		

[ ] Less fees ($_____) already paid for ___ month(s) extension of time on _____.

[ ] Please charge my Deposit Account No. 02-4035 in the amount of $_____.

[XX] Credit Card Payment **online**, authorizing payment in the amount of $1,227.00

[ ] A check in the amount of $_____ is attached (check no.).

[XX] The Commissioner is hereby authorized and requested to charge any additional fees which may be required in connection with this application or credit any overpayment to Deposit Account No. 02-4035. This authorization and request is not limited to payment of all fees associated with this communication, including any Extension of Time fee, not covered by check or specific authorization, but is also intended to include all fees for the presentation of extra claims under 37 CFR §1.16 and all patent processing fees under 37 CFR §1.17 throughout the prosecution of the case. This blanket authorization does not include patent issue fees under 37 CFR §1.18.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,575	09/26/2006	Benjamin Firooz Ghassabian	GHASSABIAN12	7464

1444 7590 04/14/2009

BROWDY AND NEIMARK, P.L.L.C.
624 NINTH STREET, NW
SUITE 300
WASHINGTON, DC 20001-5303

EXAMINER	
LAM, VINH TANG	

ART UNIT	PAPER NUMBER
2629	

MAIL DATE	DELIVERY MODE
04/14/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/553,575	GHASSABIAN, BENJAMIN FIROOZ	
	Examiner	Art Unit	
	VINH T. LAM	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 February 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) *1-23* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _____ is/are rejected.

7)☐ Claim(s) *24-34* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 October 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/17/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Election/Restrictions

1. Claims **1**-**23** are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Groups **1**-**3**, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 02/09/2009.

2. Applicant's election **without** traverse of Group **4** (Claims **24**-**29**) and Claims **30**-**32** in the reply filed on 02/09/2009 is acknowledged.

3. Newly added Claims **33** and **34**.

Claim Rejections - 35 USC § 112

The following is a quotation of the **second paragraph** of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim **24** recites the limitations, "the input means" in the first line of the first paragraph, "the letters" in the first line of the second paragraph, "the system" in the fourth line of the third paragraph, and "said sequence" in the fourth line of the third paragraph. There are insufficient antecedent basis for these limitations in the claims.

5. Claim **30** recites the limitation, "said first text components" in the first line of the third paragraph, and "the second group of text components" in the fifth line

of the fourth paragraph. There are insufficient antecedent basis for these limitations in the claims.

6. Claims **31** and **32** recite the limitation, "said second group of text components" in the fifth line of the fourth paragraph. There is insufficient antecedent basis for this limitation in the claim.

To further advance prosecution, the Examiner interprets the above limitations, respectively, as "a plurality of input means", "a plurality of the alphabet letters", "the data entry system", "a sequence", "the first type of text components", and "the second type of text components" (for Claims 30-32).

7. Claim **24** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The limitation of Claim **24** "…the system compares said sequence of **input signals** with the **input signals** corresponding to each of at least some of said words …." is not clear.

What are the differences between the **sequence of input signals** and the **input signals** corresponding to each of at least some of said words?

How does the system compare **input signals** with the **input signals** corresponding to each of at least some of said words; comparing the input signals among themselves? For example, the input signals are the sequence of "c", "o", and "m", the system compares each of the letters "c", "o", and "m" against the others? Or the system compares the combination of the letters "c", "o", and

"m" to other combinations previously stored to predict the next input signals for determining user's choice of a word?

To further advance prosecution, the Examiner interprets the above limitation as "… the system compares said sequence of current **input signals** with the previously stored **input signals** corresponding to each of at least some of said words …."

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims **24**-**27** and **30**-**32** are rejected under 35 U.S.C. 102(b) as being anticipated by **Vale (US Patent No. 6359572).**

Regarding Claim **24**, (Original) **Vale** teaches a data entry system (*20*) comprising:

a number of predefined input signals (*i.e. commands and information,* Col. **3**, Ln. **9**) provided by interacting with the input means (*i.e. 32, 34, and 36* of FIG. **1**) of an object including predefined types of interaction (*i.e. touch-sensitive, audio, and physical,* Col. **3**, Ln. **11-14**) provided with a number of keys such as physical (*i.e. keyboard 36,* Col. **3**, Ln. **14**, FIG. **2**) or virtual keys (*i.e. touch-*

sensitive display 32, Col. **3**, Ln. **11**), corresponding to an electronic device for at least entering arbitrary characters (Col. **3**, Ln. **5**-**14**, FIGs. **1** & **2**) wherein,

said data entry system uses a number of symbols including at least the letters of the alphabet of at least one language (*i.e. inherent for Vale's keyboard and touch-sensitive display*) and wherein said symbols are assigned to said input signals such that at least two of said letters are assigned to at least one of said input signals (*i.e. inherent in MS Word ™ Customize Keyboard, e.g. "Ctrl+A+C" may be assigned to turn lower case letters into upper case letters*) and wherein,

said data entry system uses a number of words (*i.e. inherent in MS Word ™ English Language, e.g. the words "to" and "be"*) wherein each of said words is composed of at least one of said symbols (*i.e. inherent, for Vale's keyboard e.g. the symbols "t" and "o"*), wherein in order to enter one of said words a user provides at least the input signals corresponding to the symbols of said word (Col. **16**, Ln. **53**-**68**, FIGs. **11** & **12**) and the system compares said sequence of input signals with the input signals corresponding to each of at least some of said words and proposes a corresponding word (Col. **15**, Ln. **17**-**25**, FIG. **8**) and wherein,

at least the input means to which said letters are assigned are split into two groups wherein each group is used by the finger of a different user's hand (*i.e. inherent, e.g. the groups "ASDFG" and "HJKL;" are groups of keys used by the Left and Right hands respectively*).

Regarding Claim **25**, (Original) **Vale** teaches the data entry system according to claim 24, wherein at least the input means to which said letters are

assigned are split into two groups and are disposed on opposite sides of an electronic device (*i.e. inherent, e.g. the groups "ASDFG" and "HJKL;" letters are arranged to the Left and Right sides of the keyboard respectively*).

Regarding Claim **26**, (Original) **Vale** teaches the data entry system according to claim 24, wherein further a symbol assigned to an input signal is entered by a procedure of input including:

providing said input signal (Col. **16**, Ln. **41**-**46**, FIG. **11**); and

providing a speech information corresponding to said symbol for selecting said symbol among the symbols that are assigned to said input signal (Col. **4**, Ln. **21**-**26**, FIGs. **2 & 6**), wherein said speech information is detected and analyzed based on at least one of a user's voice (Col. **4**, Ln. **55**-**65**, FIG. **2**) and a user's lip movements.

Regarding Claim **27**, (Original) **Vale** teaches the data entry system according to claim 24, wherein a further symbol assigned to an input signal is entered by a procedure of input including:

providing said input signal (Col. **16**, Ln. **41**-**46**, FIG. **11**); and

providing a speech information corresponding to said symbol for selecting said symbol among the symbols that are assigned to said input signal , wherein said speech information is detected and analyzed based on at least one of a user's voice (Col. **4**, Ln. **55**-**65**, FIG. **2**) and a user's lip movements; and

wherein said data entry system uses at least one database of words such that in order to enter a word of said a least one database (*i.e. table stores values*

of the keys, Col. **15**, Ln. **11**-**12**) a user uses one of at least a first and a second methods of input (Col. **15**, Ln. **8**-**16**, FIG. **8**), wherein:

a first method of input includes combining information corresponding to said word (Col. **15**, Ln. **26**-**30**, FIG. **8**), wherein said combined information includes:

a first information including entering at least one character such as a letter of said word through said procedure of input (Col. **15**, Ln. **8**-**11**, FIG. **8**); and

a second information including providing the input signals corresponding to at least some of the other characters of said word without providing speech (Col. **15**, Ln. **26**-**27**, FIG. **8**);

a second method of input includes providing information including the input signals corresponding to substantially all of the characters of said word without providing a speech (Col. **16**, Ln. **53**-**62**, FIG. **12**), wherein the system compares said information with the information corresponding to the words of said database and proposes a corresponding word (Col. **17**, Ln. **1**-**22**, FIGs. **13**-**15**).

Regarding Claim **30**, (Original) **Vale** teaches a data entry system (*20*) comprising;

a number of predefined input signals (*i.e. commands and information,* Col. **3**, Ln. **9**) provided by interacting with the input means (*i.e. 32, 34, and 36* of FIG. **1**) of an object, including predefined types of interaction (*i.e. touch-sensitive, audio, and physical ,* Col. **3**, Ln. **11**-**14**) provided with a number of keys, such as physical (*i.e. keyboard 36,* Col. **3**, Ln. **14**, FIG. **2**) or virtual keys (*i.e. touch-*

sensitive display 32, Col. **3**, Ln. **11**), corresponding to an electronic device for at least entering arbitrary characters (Col. **3**, Ln. **5**-**14**, FIGs. **1** & **2**) wherein,

said data entry system uses a first type of text components including at least the letters of the alphabet of at least one language (*i.e. inherent for Vale's keyboard, touch-sensitive display, and voice recognition to have at least one letter of the alphabet of at least one language*) and a second type of text components generally each including a portion of a word, such as a chain of characters generally corresponding to a syllable of a word of a language (Col. **15**, Ln. **26**-**27**, FIG. **8**), wherein

said first text components are assigned to said input signals such that at least two of said letters are assigned to at least one of said input signals (*i.e. inherent in MS Word ™ Customize Keyboard, e.g. "Ctrl+A+C" may be assigned to turn lower case letters into upper case letters*), and wherein a text component of the second group of text components is entered by a procedure of input including:

providing the input signals corresponding to at least two of its characters (*i.e. inherent for a voice recognition device*); and

providing a speech information corresponding to said text component for selecting said text component among the text components that are represented by said provided input signals (Col. **4**, Ln. **21**-**26**, FIGs. **2 & 6**), wherein said speech information is detected and analyzed based on at least one of a user's voice (Col. **4**, Ln. **55**-**65**, FIG. **2**) and a user's lip movements.

Regarding Claim **31**, (Original) **Vale** teaches the data entry system according to claim 30, wherein said second group of text components include the word of a language having one syllable (*i.e. inherent for Vale's Keyboard to have a word of language to have one syllable, e.g. English*).

Regarding Claim **32**, (Original) **Vale** teaches the data entry system according to claim 30, wherein said second group of text components includes portions of a word, where said portions of a word have more than one syllable (*i.e. inherent for Vale's Keyboard to have a word of language to have one syllable, e.g. English*).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims **29**, and **33**-**34** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Vale (US Patent No. 6359572).**

Regarding Claim **29**, (Original) **Vale** teaches the data entry system according to claim 24, Vale does not teach wherein substantially all of said letters are assigned to four of said input signals.

However, as to substantially all of said letters are assigned to four of said input signals is an obvious Design Choice, because the number of letters

that are assigned to a key or button depending on once choice or preference, and also cost, and size. For example, a keyboard has “!” and “1” assigned to one key, one the other hand, a cell phone has “2”, “a”, “b”, and “c” designated to one key.

Regarding Claim **33**, (New) **Vale** teaches the data entry system according to claim 25.

Vale does not teach the input means to which the letters are assigned consists of four keys and wherein each of said two groups includes two of said four keys.

However, it would have been an obvious **choice of design** for the input means to which the letters are assigned consists of four keys and wherein each of said two groups includes two of said four keys are, because the number of letters that are assigned to a key or button depending on its application, cost, and size. For example, a keyboard has “!” and “1” assigned to one key, one the other hand, a cell phone has “2”, “a”, “b”, and “c” designated to one key.

Regarding Claim **34**, (New) the data entry system according to claim 33, wherein **Vale** teaches said data entry system includes a database of words and said letter keys are used in a word predictive text entry system based on key presses corresponding to the letters of a word provided by the user (Col. **15**, Ln. **17**-**25**, FIG. **8**).

10. Claim **28** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Vale (US Patent No. 6359572)** in view of **Pratley et al. (US Patent No. 6356866).**

Regarding Claim **28**, (Original) **Vale** teaches the data entry system according to claim 24.

However, **Vale** does not teach that at least the letters having ambiguously resembling speech are separately from each other assigned to different input signals.

In the same field of endeavor, **Pratley et al.** teach that at least the letters having ambiguously resembling speech are separately from each other assigned to different input signals (Col. **1**, Ln. **58**-**68**).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine **Vale** teaching of data entry system comprising input signals with input means, symbols or letters of the alphabet, uses a number of words, and letters being split into two groups with **Pratley et al.** teaching of at least the letters having ambiguously resembling speech are separately from each other assigned to different input signals in order to benefit of a time saving and shortcut interfacing by having the data entry system comprising input signals with input means, symbols or letters of the alphabet, uses a number of words, wherein letters being split into two groups, and at least the letters having ambiguously resembling speech are separately from each other assigned to different input signals.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Chadha; Lovleen (US Patent No. 7218249).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VINH T. LAM whose telephone number is (571)270-3704. The examiner can normally be reached on M-F (7:00-4:30) EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on (571) 272-7674. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/VTL/

/Amare Mengistu/
Supervisory Patent Examiner, Art Unit 2629

Notice of References Cited	Application/Control No. 10/553,575	Applicant(s)/Patent Under Reexamination GHASSABIAN, BENJAMIN FIR	
	Examiner VINH T. LAM	Art Unit 2629	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-6,359,572 B1	03-2002	Vale, Peter O.	341/23
*	B	US-6,356,866 B1	03-2002	Pratley et al.	704/9
*	C	US-7,218,249 B2	05-2007	Chadha, Lovleen	341/23
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10553575	GHASSABIAN, BENJAMIN FIROOZ
	Examiner	Art Unit
	VINH T LAM	2629

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	07/30/2008	03/31/2009							
	1	÷	N							
	2	÷	N							
	3	÷	N							
	4	÷	N							
	5	÷	N							
	6	÷	N							
	7	÷	N							
	8	÷	N							
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	12	÷	N							
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	14	÷	N							
	15	÷	N							
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	21	÷	N							
	22	÷	N							
	23	÷	N							
	24	÷	✓							
	25	÷	✓							
	26	÷	✓							
	27	÷	✓							
	28	÷	✓							
	29	÷	✓							
	30	÷	✓							
	31	÷	✓							
	32	÷	✓							
	33		✓							
	34		✓							

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10553575	GHASSABIAN, BENJAMIN FIROOZ
	Examiner	Art Unit
	VINH T LAM	2629

SEARCHED			
Class	Subclass	Date	Examiner
345	156-172	3/31/2009	Vinh Lam

SEARCH NOTES		
Search Notes	Date	Examiner
Search Inventors. No ODP.	7/30/2008	Vinh Lam
Search Internet for synonyms and technical terms.	3/31/2009	Vinh Lam
Search Class/Subclass with 2629 QEM support.	3/31/2009	Vinh Lam
Search EAST for prior arts.	3/31/2009	Vinh Lam

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

/Vinh T Lam/ Examiner, Art Unit 2629	

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BIB DATA SHEET

CONFIRMATION NO. 7464

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
10/553,575	09/26/2006	345	2629	GHASSABIAN12

APPLICANTS

Benjamin Firooz Ghassabian, Great Neck, NY;

**** CONTINUING DATA ***************************

This application is a 371 of PCT/US04/12082 04/19/2004
which claims benefit of 60/463,844 04/18/2003
and claims benefit of 60/466,594 04/30/2003
and claims benefit of 60/468,028 05/05/2003
and claims benefit of 60/474,447 05/30/2003
and claims benefit of 60/475,533 06/03/2003
and claims benefit of 60/482,706 06/26/2003
and claims benefit of 60/482,998 06/27/2003
and claims benefit of 60/500,602 09/05/2003
and claims benefit of 60/504,331 09/19/2003
and claims benefit of 60/510,885 10/14/2003
and claims benefit of 60/536,564 01/14/2004
and claims benefit of 60/552,968 03/11/2004
and claims benefit of 60/557,140 03/26/2004
and claims benefit of 60/496,702 08/20/2003

**** FOREIGN APPLICATIONS ***************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **** ** SMALL ENTITY **
03/24/2007

Foreign Priority claimed ☐ Yes ☑ No 35 USC 119(a-d) conditions met ☐ Yes ☑ No Verified and Acknowledged /VINH TANG LAM/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		NY	81	1	1

ADDRESS

BROWDY AND NEIMARK, P.L.L.C.
624 NINTH STREET, NW
SUITE 300
WASHINGTON, DC 20001-5303
UNITED STATES

TITLE

Systems to enhance data entry in mobile and fixed environment

FILING FEE RECEIVED		
1542	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____

BIB (Rev. 05/07).

		❑ Credit

Receipt date: 10/17/2005

10/553575
JC12 Rec'd PCT/PTO 17 OCT 2005

PATENT

Docket No. 676-025US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s) : Ghassabian

Serial No. : TBA

Group Art Unit: ~~TBA~~ 2629

Filed : October 17, 2005

Examiner: ~~Not yet assigned~~ Vinh Lam

For : SYSTEMS TO ENHANCE DATA ENTRY IN MOBILE AND FIXED ENVIRONMENT

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Information Disclosure Statement is filed in accordance with 37 C.F.R. §§1.56, 1.97 and 1.98. The items listed on Form PTO-1449, a copy of which is enclosed, may be deemed to be pertinent to the above-identified application and are made of record to assist the Patent and Trademark Office in its examination of this application. The Examiner is respectfully requested to fully consider the items and to independently ascertain their teaching.

1. [ ] For each of the following items listed on the enclosed copy of Form PTO-1449 that is not in the English language, an English language translation of that item or a portion thereof or a concise explanation of the relevance of that item is enclosed:
   A:
   B:

2. [ ]For each of the following items listed on the enclosed copy of Form PTO-1449 that is not in the English language, a concise explanation of the relevance of that item is incorporated in the specification of the above-identified application.

3. [ ]Any copy of the items listed on the enclosed copy of Form PTO-1449 that is not enclosed with this Information Disclosure Statement was previously cited by or submitted to the Patent and Trademark Office in the prior [ ] Continuation, [ ] Divisional or [ ] Continuation-In-Part application under 37 C.F.R. §1.60, U.S. Serial No. _____, filed _____.

4. [X]No fee is due under 37 C.F.R. §1.17(p) for this Information Disclosure Statement since it is being filed in compliance with:

[ ] 37 C.F.R. §1.97(b)(1), within three months of the filing date of the above-identified application.

[X] 37 C.F.R. §1.97(b)(2), within three months of the date of entry into the national stage as set forth in §1.491 in an international application.

[ ] 37 C.F.R. §1.97(b)(3), before the mailing date of a first Office action on the merits.

5. [ ] No fee is due under 37 C.F.R. §1.17(p) for this Information Disclosure Statement since it is being filed in compliance with 37 C.F.R. §1.97(c), after the period specified in paragraph 4 above but before the mailing date of a final action or a Notice of Allowance (where there has been no prior final action), and is accompanied by one of the certifications pursuant to 37 C.F.R. §1.97(e) set forth in paragraph 9 below.

6. [ ] A fee is due under 37 C.F.R. §1.17(p) for this Information Disclosure Statement since it is being filed in compliance with 37 C.F.R. §1.97(c), after the period specified in paragraph 4 above but before the mailing date of a final action or a notice of allowance (where there has been no prior final action):

[ ]A check in the amount of $200.00 is enclosed in payment of the fee.

[ ] Charge the fee to Deposit Account No. 19-2825 . Order No. _____. A DUPLICATE COPY OF THIS SHEET IS ATTACHED.

7. [ ] A fee is due under 37 C.F.R. §1.17(i)(1) for this Information Disclosure Statement since it is being filed in compliance with 37 C.F.R. §1.97(d), after the mailing date of a final action or a notice of allowance, whichever comes first, but before payment of the issue fee, and is accompanied by:

a. one of the certifications pursuant to 37 C.F.R. §1.97(e) set forth in paragraph 9 below; and

b. the attached petition requesting consideration of this Information Disclosure Statement; and

c. the fee due under 37 C.F.R. §1.17(i)(1) which is paid as set forth in paragraph 10 below.

8. [ ] A fee is due under 37 C.F.R. §1.17(i)(1) for this Information Disclosure Statement since it is being filed in compliance with:

a. [ ] 37 C.F.R. §1.313(b)(3), after the issue fee has been paid and information cited in this Information Disclosure Statement may render at least one claim unpatentable and is accompanied by the attached Petition To Withdraw Application From Issue;

b. [ ] 37 C.F.R. §1.313(b)(5), after the issue fee has been paid and information cited in this Information Disclosure Statement is to be considered in a Continuation application upon abandonment of the instant application and is accompanied by the attached Petition To Withdraw Application From Issue.

c. The fee due under 37 C.F.R. §1.17(i)(1) is paid as set forth in paragraph 10 below.

9. [ ] I hereby certify that each item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement.

[ ] I hereby certify that no item of information in the Information Disclosure Statement filed herewith was cited in a communication from a foreign patent office in a counterpart foreign application or, to my knowledge after making reasonable inquiry, was known to any individual designated in §1.56© more than three months prior to the filing of this Information Disclosure Statement.

10. [ ] A check in the amount of $130.00 is enclosed in payment of the fee due under 37 C.F.R. §1.17(i)(1).

Receipt date: 10/17/2005

10/553575
JC12 Rec'd PCT/PTO 17 OCT 2005
10553575 - GAU: 2629

[ ] Charge the fee due under 37 C.F.R. §1.17(i)(1) to Deposit Account No. . Order No. _____. A DUPLICATE COPY OF THIS SHEET IS ATTACHED.

[X] The Commissioner is hereby authorized to charge any additional fees which may be required for this Information Disclosure Statement, or credit any overpayment to Deposit Account No. 19-2825. Order No. 676-025US.

Respectfully submitted,

SOFER & HAROUN, L.L.P.

Dated: 10/17/05

By: _____
Joseph Sofer
Reg. No. 34,438

Mailing Address:

SOFER & HAROUN, LLP.
317 Madison Avenue, Suite 910
New York, NY 10017
Tel:(212) 697-2800
Fax: (212) 697-3004

JC12 Rec'd PCT/PTC 17 OCT 2005

Sheet 1 of 1

FORM PTO-1449 U.S. DEPARTMENT OF COMMERCE (Rev.2-3) PATENT AND TRADEMARK OFFICE	ATTY. DOCKET NO. 676-025US	SERIAL NO. TBA 10/553575
INFORMATION DISCLOSURE STATEMENT BY APPLICANT	APPLICANT Ghassabian	
(Use several sheets if necessary)	FILING DATE October 17, 2005	GROUP TBA

U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
/V.L./		6 2 9 5 0 5 2	09/2001	Kato et al.	345	179	February 18, 1997
/V.L./		4 5 3 1 1 1 9	07/1985	Nakayama et al.	340	712	November 30, 1984
/V.L./		5 7 9 0 1 0 3	08/1998	Willner	345	168	October 4, 1995
/V.L./		5 8 6 7 1 4 9	02/1999	Jaeger	345	172	August 14, 1995
/V.L./		6 3 2 6 9 5 2	12/2001	Amro et al.	345	168	April 24, 1998
/V.L./		6 4 4 5 3 8 1	09/2002	Chou	345	168	March 9, 2004

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES	TRANSLATION NO

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

			International Search Report - August 5, 2004

EXAMINER	DATE CONSIDERED
/Vinh Lam/	03/27/2009

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Atty. Docket: GHASSABIAN 12

In re Application of:	)	Conf. No.: 7464
	)	
Benjamin Firooz GHASSABIAN et al.	)	Art Unit: 2629
	)	
Appln. No.: 10/553,575	)	Examiner: V. T. LAM
	)	
Filing Date: September 26, 2006	)	Washington D.C.
	)	
For: SYSTEMS TO ENHANCE DATA ENTRY IN MOBILE AND FIXED ENVIRONMENT	)	July 14, 2009

PETITION UNDER 37 CFR §1.78(a)(3) TO ACCEPT AN UNINTENTIONALLY DELAYED CLAIM UNDER 35 U.S.C. 120 FOR THE BENEFIT OF A PRIOR-FILED APPLICATION

U.S. Patent and Trademark Office
Customer Service Window
Randolph Building, Mail Stop **Amendment**
401 Dulany Street
Alexandria, VA 22314

Sir:

Pursuant to 37 CFR §1.78(a)(3), applicants petition that their delayed claim under 35 USC 120 for the benefit of a prior filed application be accepted so that the present application may claim benefit of the filing date of application 10/483,528, which was a national stage application of PCT/US02/22385, filed July 12, 2002, and which in turn claims benefit of provisional applications 60/337,425, filed December 5, 2001, 60/328,002, filed October 9, 2001, 60/324,581, filed September 25, 2001, and 60/304,845, filed July 12, 2001.

In compliance with 37 CFR §1.78(a)(3)(i) requiring a reference to the prior filed applications, submitted herewith is a Supplemental Application Data Sheet, which includes the benefit of application 10/483,528, and the four provisionals from which it claimed benefit.

In compliance with 37 CFR §1.78(a)(3)(ii), payment of the surcharge of $1,410.00, as required by 37 CFR §1.17(t), is authorized herewith. It is assumed that only one such fee is required in order to claim benefit of all of the applications listed above. No additional such fees are authorized at this time.

In compliance with 37 CFR §1.78(a)(3)(iii), the undersigned hereby states, on behalf of the applicants, that the entire delay between the date the claim was due under paragraph (a)(2)(ii) of 37 CFR §1.78 and the date the claim was filed was unintentional.

Granting of this petition and according of the present application the benefit of the above-identified prior filed application, and the provisional applications from which it in turn claims benefit, are therefore earnestly solicited.

Respectfully submitted,

BROWDY AND NEIMARK, P.L.L.C.
Attorneys for Applicant(s)

By /rlb/
Roger L. Browdy
Registration No. 25,618

RLB/me
Telephone No.: (202) 628-5197
Facsimile No.: (202) 737-3528
G:\BN\B\bend\ghassabian12\pto\2009-07-14Petition.doc

Supplemental Application Data Sheet

Application Information

Application Number::	10/553,575
Filing Date::	September 26, 2006
Application Information	
Application Type::	Regular
Subject Matter::	Utility
Suggested Classification::	
Suggested Group Art Unit::	
CD-ROM or CD-R?::	None
Number of CD Disks::	
Number of Copies of CDs::	
Sequence Submission?::	
Computer Readable Form (CRF)?::	No
Number of copies of CRF::	
Title::	SYSTEMS TO ENHANCE DATA ENTRY IN MOBILE AND FIXED ENVIRONMENT
Attorney Docket Number::	GHASSABIAN12
Request for Early Publication?::	No
Request for Non-Publication?::	No
Suggested Drawing Figure::	
Total Drawing Sheets::	81
Small Entity?::	Yes
Latin Name::	
Variety Denomination Name::	
Petition Included::	No
Petition Type::	
Licensed US Govt. Agency::	
Contract or Grant Numbers::	
Secrecy Order in Parent Appl.?::	No
Applicant Information	
Applicant Authority Type::	Inventor
Primary Citizenship Country::	Israel

Status::	Full Capacity
Given Name::	Firooz
Middle Name::	Benjamin
Family Name::	GHASSABIAN
Name Suffix::	
City of Residence::	Great Neck
State or Province of Residence::	New York
Country of Residence::	U.S.A.
Street of Mailing Address::	11 Locust Cove Lane
City of Mailing Address::	Great Neck
State or Province of Mailing Address::	New York
Country of Mailing Address::	U.S.A.
Postal or Zip Code of Mailing Address::	11024
Correspondence Information	
Correspondence Customer Number::	001444
Representative Information	
Representative Customer Number::	001444

Domestic Priority Information

Application::	Continuity Type::	Parent Application::	Parent Filing Date::
This Application	National Stage of	PCT/US04/12082	04-19-2004
PCT/US04/12082	Appln claiming benefit under 35 USC 119(e)	60/463,844	04-18-2003
PCT/US04/12082	Appln claiming benefit under 35 USC 119(e)	60/466,594	04/30/2003
PCT/US04/12082	Appln claiming benefit of 35 USC 119(e)	60/468,028	05/05/2003
PCT/US04/12082	Appln claiming benefit of 35 USC 119(e)	60/474,447	05/30/2003
PCT/US04/12082	Appln claiming benefit of 35 USC 119(e)	60/475,533	06/03/2003
PCT/US04/12082	Appln claiming benefit of 35 USC 119(e)	60/482,706	06/26/2003
PCT/US04/12082	Appln claiming benefit of 35 USC 119(e)	60/482,998	06/27/2003
PCT/US04/12082	Appln claiming benefit of 35 USC 119(e)	60/496,702	08/20/2003
PCT/US04/12082	Appln claiming benefit of 35 USC 119(e)	60/500,602	09/05/2003
PCT/US04/12082	Appln claiming benefit of 35 USC 119(e)	60/504,331	09/19/2003
PCT/US04/12082	Appln claiming benefit of 35 USC 119(e)	60/510,885	10/14/2003
PCT/US04/12082	Appln claiming benefit of 35 USC 119(e)	60/536,564	01/14/2004
PCT/US04/12082	Appln claiming benefit of 35 USC 119(e)	60/552,968	03/11/2004

PCT/US04/12082	Appln claiming benefit of 35 USC 119(e)	60/557,140	03/26/2004
This Application	Continuation-in-Part of	10/483,528	01-19-2004
10/483,528	National Stage of	PCT/US02/22385	07-12-2002
PCT/US02/22385	Appln claiming benefit of 35 USC 119(e)	60/337,425	12-05-2001
PCT/US02/22385	Appln claiming benefit of 35 USC 119(e)	60/328,002	10-09-2001
PCT/US02/22385	Appln claiming benefit of 35 USC 119(e)	60/324,581	09-25-2001
PCT/US02/22385	Appln claiming benefit of 35 USC 119(e)	60/304,845	07-12-2001

Assignment Information

Assignee Name::

Street of Mailing Address::

City of Mailing Address::

State or Province of Mailing Address::

Country of Mailing Address::

Postal or Zip Code of Mailing Address::

Electronic Patent Application Fee Transmittal	
Application Number:	10553575
Filing Date:	26-Sep-2006
Title of Invention:	Systems to enhance data entry in mobile and fixed environment
First Named Inventor/Applicant Name:	Benjamin Firooz Ghassabian
Filer:	Roger Lowen Browdy
Attorney Docket Number:	GHASSABIAN12
Filed as Small Entity	

U.S. National Stage under 35 USC 371 Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Claims in excess of 20	2615	5	26	130
Miscellaneous-Filing:				
Petition:				
Priority accept. unintent. delayed claim	1454	1	1410	1410
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**1540**

Electronic Acknowledgement Receipt	
EFS ID:	5701518
Application Number:	10553575
International Application Number:	
Confirmation Number:	7464
Title of Invention:	Systems to enhance data entry in mobile and fixed environment
First Named Inventor/Applicant Name:	Benjamin Firooz Ghassabian
Customer Number:	01444
Filer:	Roger Lowen Browdy
Filer Authorized By:	
Attorney Docket Number:	GHASSABIAN12
Receipt Date:	14-JUL-2009
Filing Date:	26-SEP-2006
Time Stamp:	19:06:01
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$1540
RAM confirmation Number	5389
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1		2009-07-14Amendment.pdf	282723 dd32e0df68dbe860449d9d0c1f7034c12a31ce8e	yes	13
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Miscellaneous Incoming Letter		1	1	
	Amendment/Req. Reconsideration-After Non-Final Reject		2	2	
	Claims		3	7	
	Applicant Arguments/Remarks Made in an Amendment		8	13	
Warnings:					
Information:					
2	Petition for review by the Office of Petitions.	2009-07-14Petitiion.pdf	84028 27bfe7f02dc038f9ddc6ba4f7b776b713357324d	no	2
Warnings:					
Information:					
3	Application Data Sheet	2009-07-14SupplADS.pdf	130385 c9db9a32eb3393f7ea94a2a95b43451542cbad76	no	3
Warnings:					
Information:					
This is not an USPTO supplied ADS fillable form					
4	Fee Worksheet (PTO-875)	fee-info.pdf	31799 afe47c22d60223c63314511b2a4ea065879b1554	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	528935		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of: Benjamin Firooz GHASSABIAN et al.

Art Unit: 2629

Application No.: 10/553,575 Conf. No. 7464

Examiner: Vinh Tang Lam

Filed: September 26, 2006

Washington, D.C.

For: SYSTEMS TO ENHANCE DATA ENTRY IN MOBILE AND FIXED ENVIRONMENT

Atty.'s Docket: GHASSABIAN12

Date: July 14, 2009

Honorable Commissioner for Patents
U.S. Patent and Trademark Office
Customer Service Window
Randolph Building, Mail Stop **Amendment**
401 Dulany Street
Alexandria, VA 22314

Sir:

Transmitted herewith is a [XX] Amendment [XX] Petition Under 37 CFR §1.78(a)(3) and Supplemental Application Data Sheet in the above-identified application.

[XX] Small Entity Status: Applicant(s) claim small entity status. See 37 C.F.R. §1.27.

[XX] Petition fee of $1,410.00 as required by 37 CFR §1.17(t).

[XX] The fee has been calculated as shown below:

	(Col. 1) CLAIMS REMAINING AFTER AMENDMENT		(Col. 2) HIGHEST NO. PREVIOUSLY PAID FOR	(Col. 3) PRESENT EXTRA EQUALS	SMALL ENTITY RATE	SMALL ENTITY ADDITIONAL FEE	OR	OTHER THAN SMALL ENTITY RATE	OTHER THAN SMALL ENTITY ADDITIONAL FEE
TOTAL	* 39	MINUS	** 34	5	x 26	$ 130.00		x 52	$
INDEP.	* 3	MINUS	*** 5	0	x 110	$		x 220	$
FIRST PRESENTATION OF MULTIPLE DEP. CLAIM					+ 195	$		+ 390	$
					ADDITIONAL FEE TOTAL	$ 130.00	OR	TOTAL	$

* If the entry in Col. 1 is less than the entry in Col. 2, write "0" in Col. 3.

** If the "Highest Number Previously Paid for" IN THIS SPACE is less than 20, write "20" in this space.

*** If the "Highest Number Previously Paid for" IN THIS SPACE is less than 3, write "3" in this space.

The "Highest Number Previously Paid For" (total or independent) is the highest number found from the equivalent box in Col. 1 of a prior amendment of the number of claims originally filed.

[XX] Conditional Petition for Extension of Time

If any extension of time for a response is required, applicant requests that this be considered a petition therefor.

[ ] It is hereby petitioned for an extension of time in accordance with 37 CFR 1.136(a). The appropriate fee required by 37 CFR 1.17 is calculated as shown below:

Small Entity Response Filed Within		Other Than Small Entity Response Filed Within	
[ ] First	- $ 65.00	[ ] First	- $ 130.00
[ ] Second	- $ 245.00	[ ] Second	- $ 490.00
[ ] Third	- $ 555.00	[ ] Third	- $ 1110.00
[ ] Fourth	- $ 865.00	[ ] Fourth	- $ 1730.00
Month After Time Period Set		Month After Time Period Set	

[ ] Less fees ($_____) already paid for ___ month(s) extension of time on _____.

[ ] Please charge my Deposit Account No. 02-4035 in the amount of $_____.

[XX] Credit Card authorization is submitted herewith, authorizing payment in the amount of $ 1,540.00.

[ ] A check in the amount of $_____ is attached (check no.).

[XX] The Commissioner is hereby authorized and requested to charge any additional fees which may be required in connection with this application or credit any overpayment to Deposit Account No. 02-4035. This authorization and request is not limited to payment of all fees associated with this communication, including any Extension of Time fee, not covered by check or specific authorization, but is also intended to include all fees for the presentation of extra claims under 37 CFR §1.16 and all patent processing fees under 37 CFR §1.17 throughout the prosecution of the case. This blanket authorization does not include patent issue fees under 37 CFR §1.18.

BROWDY AND NEIMARK, P.L.L.C.

Attorneys for Applicant(s)

Facsimile: (202) 737-3528
Telephone: (202) 628-5197

By: /rlb/
Roger L. Browdy
Registration No. 25,618

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

ATTY.'S DOCKET: GHASSABIAN12

In re Application of:	)	Art Unit: 2629
	)	
Benjamin GHASSABIAN et al.	)	Examiner: Lam, Vinh Tang
	)	
Appln. No.: 10/553,575	)	Washington, D.C.
	)	
Date Filed: September 26, 2006	)	Confirmation No. 7464
	)	
For: SYSTEMS TO ENHANCE DATA ENTRY IN MOBILE AND FIXED ENVIRONMENT	)	July 14, 2009

AMENDMENT

Honorable Commissioner for Patents
U.S. Patent and Trademark Office
Customer Service Window
Randolph Building, Mail Stop **Amendment**
401 Dulany Street
Alexandria, VA 22314

Sir:

Further to an office action dated April 14, 2009, kindly amend the application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 7 of this paper.

Attachment: Petition Under 37 CFR §1.78(a)(3) and Supplemental Application Sheet are being filed herewith.

Amendments to the Claims

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1-34. (Cancelled)

35. (New) A data entry system, comprising:

an input unit adapted to receive four different first input signals, each associated with a group of symbols and together associated with all the letters of an alphabet of a language; and

a word predictive system adapted to select a word from a word database responsive to a sequence of first input signals provided by a user, while selecting for each of the first input signals in the sequence one of the letters out of the group of symbols with which it is associated.

36. (New) The system of claim 35, comprising a second input unit adapted to receive second input signals corresponding to the letters of the alphabet and wherein the word predictive system is adapted to select a word for a sequence of first input signals using received second input signals.

37. (New) The system of claim 36, wherein the second input unit is adapted to receive speech signals corresponding to the letters of the alphabet.

38. (New) The system of claim 37, comprising a recognition system which uses the speech signals corresponding to the letters of the alphabet in selecting for first input signals a single letter from the group of symbols associated with the first signal..

39. (New) The system of claim 35, wherein the input unit comprises a single pressure sensitive pad for receiving the first input signals, corresponding with the letters of the alphabet.

40. (New) The system of claim 35, wherein the input device comprises four keys, each key being used to generate one of the first signals.

41. (New) The system of claim 40, wherein each of the signals is inputted by a single pressing on a respective one of the four keys.

42. (New) The system of claim 40, wherein the four keys are arranged in two columns each column including two of the four keys.

43. (New) The system of claim 42, wherein the columns are separated by a section not containing keys.

44. (New) The system of claim 42, wherein the columns are distanced from each other by a distance substantially greater than the widths of the keys.

45. (New) The system of claim 42, wherein the columns are located on opposite sides of a screen of the system.

46. (New) The system of claim 40, wherein the keys comprise physical keys.

47. (New) The system of claim 40, wherein the keys comprise virtual keys.

48. (New) The system of claim 40, wherein different interactions with the keys correspond to different signals.

49. (New) The system of claim 48, wherein the keys respond to two different types of interactions, a first type of interaction corresponds to respective ones of the first

signals and a second type of interaction corresponds to symbols other than those represented by the first signals.

50. (New) The system of claim 49, wherein the keys are associated with respective ones of the first signals when pressed slightly and with other symbols when pressed heavily.

51. (New) The system of claim 35, wherein each of the four input signals corresponds to at least six letters.

52. (New) The system of claim 51, wherein two of the input signals correspond to six letters.

53. (New) The system of claim 40, wherein the four keys are arranged, such that a user can touch all the four keys concurrently with two fingers, in a manner which allows selectively actuating each of the keys by one of the two fingers.

54. (New) The system of claim 53, wherein the two fingers comprise two thumbs.

55. (New) The system of claim 53, wherein the four keys are arranged such that a user can touch all the keys concurrently with a single finger, in a manner which allows selectively actuating each of the keys by the finger.

56. (New) A data entry system, comprising:

a plurality of letter keys arranged such that a user can touch all the keys concurrently with two fingers, in a manner which allows selectively actuating each of the keys by one of the two fingers; and

a processor which associates interactions with each of the plurality of keys with a group of symbols, such that together the keys are associated with all the letters of an alphabet of a language.

57. (New) The system of claim 56, wherein the plurality of keys comprise four keys associated with all the letters of the alphabet.

58. (New) The system of claim 56, wherein the two fingers comprise two thumbs.

59. (New) The system of claim 56, wherein the plurality of letter keys are arranged such that a user can touch all the keys concurrently with a single finger, in a manner which allows selectively actuating each of the keys by the finger.

60. (New) A data entry system of a device, comprising:

a plurality of keys including no more than six keys associated with all the letters of an alphabet of a language;

a screen; and

a processor adapted to display on the screen characters entered through the keys,

wherein the plurality of keys associated with all the letters of an alphabet of a language are arranged in two groups each on an opposite end of the device, the groups being separated by a section not containing keys.

61. (New) The system of claim 60, wherein the plurality of keys are arranged in two groups each on an opposite end of the screen.

62. (New) The system of claim 60, wherein the plurality of keys are organized in two columns, one on one end of the device and a second one on an opposite end of the device.

63. (New) The system of claim 60, comprising a pointing device on a side of the device opposite the screen.

64. (New) The system of claim 60, wherein at least two of the no more than six keys are located on a right side of the screen and at least two of the no more than six keys are on a left side of the screen.

65. (New) The system of claim 64, wherein the screen has a larger horizontal axis than vertical axis in its letter display orientation.

66. (New) The system of claim 60, wherein the plurality of keys comprise four keys associated with all the letters of the alphabet.

67. (New) The system of claim 60, wherein the plurality of keys associated with all the letters of the alphabet arranged such that a user can touch all the keys concurrently with two fingers, in a manner which allows selectively actuating each of the keys by one of the two fingers.

68. (New) The system of claim 60, wherein the plurality of keys are arranged in two groups of equal numbers of keys.

69. (New) The system of claim 60, wherein the keys comprise physical keys.

70. (New) The system of claim 60, wherein the keys comprise virtual keys.

71. (New) The system of claim 60, wherein each group includes at least one additional key not associated with letters.

72. (New) The system of claim 60, wherein each group includes exactly four keys on its end of the device.

73. (New) The system of claim 60, wherein each group includes exactly three keys on its end of the device.

REMARKS

The present application includes claims 35-73. Claims 1-23 have been withdrawn from consideration. Claims 1-23 have now been cancelled without prejudice toward continuation of prosecution thereof in a divisional application. Claims 24-34 have been rejected. Claims 24-34 have now been cancelled, without prejudice, and new claims 35-73 added. A petition requesting that the present application claim priority from US patent application 10/483,528, is submitted herewith, along with a Supplemental Application Data Sheet that includes the new priority claims. The official action of April 14, 2009, has now been carefully studied. Reconsideration and allowance are respectfully urged.

Claims 24, 30, 31 and 32 have been rejected under 35 USC 112, second paragraph, as being indefinite. In view of the 112 rejections, applicant has replaced the rejected claims with a new set of claims, and the patentability of these claims will be discussed herein. The new claims do not have the indefiniteness pointed out by the examiner for the rejected claims and thus these rejections have now been obviated. Reconsideration and withdrawal of these rejections are therefore respectfully urged.

Support

Claim 35 finds support at least in the passages on page 229, line 21, page 24, lines 21-22, page 156, lines 5-9, page 163, lines 3-5, page 86, line 19 – page 87, line 3, Page 183, lines 7-19, page 144, lines 15-23 and page 193, lines 5-14.

Claims 36-38 find support at least on page 25, lines 16-21 and page 183, lines 10-19. Claim 39 finds support at least on page 65, lines 11-14. Claim 40 finds support at least on pages 25 and 65. Claim 41 finds support al least on page 234, line 4. Claim 42 finds

support al least on page 154, line 9 and in Fig. 45C. Claim 43 finds support at least on page 47, line 23 – page 48, line 1. Claim 44 finds support at least in Fig. 47A. Claim 45 finds support at least in Fig. 47B. Claims 46-47 find support at least on page 207, lines 23-24. Claim 48 finds support at least on page 27 lines 13-18, page 32 lines 3-12 and page 35 lines 4-11. Claim 49 finds support at least on pages 27 and 32. Claim 50 finds support at least on page 25, lines 8-14. Claims 51-52 find support at least in Figs. 45C. Claims 53-55 find support at least on page 209, lines 19-23 and page 225.

Claims 56-59 finds support at least on page 24, lines 21-22, page 209, lines 19-23, page 225, lines 1-17, page 156, lines 5-9 and page 163, lines 3-5.

Claim 60 finds support at least on pages 155-156 and page 162, line 10.

Claim 61 finds support at least in Fig. 47B. Claims 62-64 find support at least on page 162, lines 2-10. Claims 65 and 68 find support at least in Fig. 47A. Claim 66 finds support at least on page 156, line 8. Claim 67 finds support at least on page 209, lines 19-23. Claims 69-70 find support at least on page 207, lines 23-24. Claim 71 finds support at least on page 156, lines 1-2. Claim 72 finds support at least in Fig. 71A. Claim 73 finds support at least in Figs. 62A, 47A and 47E.

102 and 103 rejections

Claims 24-27 and 30-32 were rejected under 35 USC 102(b) as being anticipated by Vale (US patent 6,359,572).

Claims 29 and 33-34 were rejected under 35 USC 103(a) as being unpatentable over Vale (US patent 6,359,572).

Claim 28 was rejected under 35 USC 103(a) as being unpatentable over Vale (US patent 6,359,572) in view of Pratley et al. (US patent 6,356,866).

All of the rejected claims have now been deleted in favor of new claims 35-73. To the extent that the previous rejections may be applicable to the new claims, these rejections are respectfully traversed.

Independent claim 35

Claim 35 requires "an input unit adapted to receive four different first input signals, each associated with a group of symbols and together associated with all the letters of an alphabet of a language".

Regarding this requirement, previously appearing in claim 29, the Examiner stated:

"Vale does not teach wherein substantially all of said letters are assigned to four of said input signals. However … is an obvious design choice, because the number of letters that are assigned to a key or button depending on once choice or preference, and also cost and size. For example, a keyboard has "!" and "1" assigned to one key …. A cell phone has "2", "a", "b" and "c" designated to one key".

Applicant respectfully disagrees and submits that the Examiner has not established a *prima facie* case of obviousness.

First, it is to be noted that claim 35 requires "a word predictive system adapted to select a word … selecting for each of the first input signals in the sequence one of the letters out of the group of symbols with which it is associated". Therefore, unlike the examples of the examiner in which the user selects which of the symbols with which a key is associated is to be used in a specific word at the time at which the key is pressed (for example, by using a shift button or by tapping a number of times), claim 35 requires that the word predictive system select which of the symbols is to be used, for example based on

frequency of use of different words as described on page 193 of the present application and/or responsive to additional user signals, as described on page 183 of the present application.

As to the selection of the number of input signals to which the letters are assigned, this is not a mere obvious design choice. The number of letters assigned to a key, which is a direct result of the number of keys or other input signals to which the letters are assigned, has an effect on the ability of the word predictive system to properly guess words. The more letters are assigned to each signal, the harder it is for the word predictive system to guess the word intended by the user. Vale is an example of the understanding in the art of this problem. While Vale realizes that there is a need to use smaller keyboards (col. 1, lines 42-46), applicant did not find any teaching in Vale to use less than 26 keys for the letters of the alphabet (see Figs. 15-18, for example).

Use of keys corresponding to a plurality of letters of the alphabet is known in the art. US patent 5,818,437 to Grover et al., describes an embodiment in which the letters of the alphabet are distributed between nine keys (Fig. 7g, for example) and an embodiment in which the letters of the alphabet are distributed between 7 keys (Fig. 13).

The statement of Grover on col. 1, lines 45-46: "Alternative embodiments have as few as three or as many as twenty keys", cannot possibly relate to an embodiment covering all the letters of the alphabet as required by claim 35. This is because one of the keys is required to be the "select" key (see abstract) and hence only two keys are used for a plurality of letters. Nowhere does Grover suggest that all the letters of the alphabet are assigned to these two keys or does Grover describe how the system determines the intended

word based on these keys. It is therefore assumed that the embodiments of few keys relate to cases in which few letters are used.

The stand of the prior art is articulated by US patent 6,734,881 to Will, which states (col. 1, line 64): "as the number of keys gets smaller, the chances increase that the user must enter a very long sequence of keystrokes before the desired word is displayed, or even that the desired word will never be displayed.". The smallest number of groups covering the alphabet in US patent 6,734,881 to Will is therefore five (col. 4, lines 46-48). Applicant notes that the difference between 5 keys and 4 keys is quite substantial. For a word including five letters, the number of possible letter combinations of a five letter word, assuming one of the keys corresponds to six letters and the rest correspond to five letters, is 5 x 5 x 5 x 5 x 6 = 3750. The number of possible letter combinations of a five letter word for four keys, assuming two correspond to 7 letters and three correspond to six letters, is 6 x 6 x 6 x 7 x 7 = 10584, nearly three times greater! It would not be a simple design choice to reduce the number of keys under these circumstances. The inventor of the present invention determined that the gain in ease of use to the human user from using only four input signals for all the letters outweighs the drawbacks in reducing the number of signals. Stating that such a decision is obvious, without bringing a teaching in the art, is impermissible hindsight.

Dependent claims

At least some of the dependent claims add further patentability over the art. Claim 43, for example, requires that the four input signals are provided by keys arranged in two columns, separated by a section not containing keys. Claim 44 requires that the columns are distanced from each other by a distance substantially greater than the widths of the keys. Claim 45 requires that the columns are located on opposite sides of a screen of the system. None of these possibilities is taught or suggested by the art. As shown in Vale and in Grover, the keys carrying letters are positioned next to each other. It is further noted that even if separation of keys can be demonstrated in the art for a large number of keys, this does not imply that it would be obvious to separate the letter keys of a limited number of keys, such as four keys assigned all the letters of the alphabet.

Independent claims 56 and 60

Claim 56 requires a plurality of letter keys arranged such that a user can touch all the keys concurrently with two fingers, in a manner which allows selectively actuating each of the keys by one of the two fingers.

This is not taught or suggested by Valey. The number of keys presented by Valey is such that this is completely impossible.

Claim 60 requires that the plurality of keys associated with all the letters of an alphabet of a language are arranged in two groups each on an opposite end of the device, the groups being separated by a section not containing keys. As discussed above, this is not described by Vale.

Conclusion

Applicants respectfully submit that in view of the above arguments the claims are allowable. Allowance of the application is respectfully awaited. If, however, the Examiner has a problem with allowing one or more of the claims, applicant suggests that the Examiner contact the undersigned to set up a telephonic interview with applicant's attorney.

Respectfully submitted,

BROWDY AND NEIMARK, P.L.L.C.
Attorneys for Applicant(s)

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PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
10/553,575	09/26/2006	

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)	SMALL ENTITY ☒ RATE ($)	SMALL ENTITY ☒ FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY FEE ($)
FOR	NUMBER FILED	NUMBER EXTRA					
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	07/14/2009	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 39	Minus	** 34	= 5	X $26 =	130	OR	X $ =	
	Independent (37 CFR 1.16(h))	* 3	Minus	***5	= 0	X $110 =	0	OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE	130	OR	TOTAL ADD'L FEE	

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)	OR	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/JOY DOBBS/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,575	09/26/2006	Benjamin Firooz Ghassabian	GHASSABIAN12	7464

1444 7590 11/18/2009

BROWDY AND NEIMARK, P.L.L.C.
624 NINTH STREET, NW
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WASHINGTON, DC 20001-5303

EXAMINER	
LAM, VINH TANG	

ART UNIT	PAPER NUMBER
2629	

MAIL DATE	DELIVERY MODE
11/18/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/553,575	GHASSABIAN, BENJAMIN FIROOZ	
	Examiner	Art Unit	
	VINH T. LAM	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *1* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 July 2009*.

2a)☐ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-73* is/are pending in the application.

4a) Of the above claim(s) *1-73* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 October 2009* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment/Election/Restrictions

Newly submitted Claims **35-73** directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

The original election without traverse (filed 02/09/2009) are Claims **24-34** directed to *an input means to which said letters are assigned are split into two groups wherein each group is used by the finger of a different user's hand.*

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, Claims **35-73** are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Conclusion

Since the above-mentioned amendment appears to be a *bona fide* attempt to reply, applicant is given a TIME PERIOD of ONE (1) MONTH or THIRTY (30) DAYS, whichever is longer, from the mailing date of this notice within which to supply the omission or correction in order to avoid abandonment. EXTENSIONS OF THIS TIME PERIOD UNDER 37 CFR 1.136(a) ARE AVAILABLE.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VINH T. LAM whose telephone number is (571)270-3704. The examiner can normally be reached on M-F (7:00-4:30) EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on (571) 272-7674. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Vinh T Lam/

Examiner, Art Unit 2629

/Amare Mengistu/

Supervisory Patent Examiner, Art Unit 2629

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10553575	GHASSABIAN, BENJAMIN FIROOZ
	Examiner	Art Unit
	VINH T LAM	2629

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	07/30/2008	03/31/2009	11/09/2009						
	1	÷	N	-						
	2	÷	N	-						
	3	÷	N	-						
	4	÷	N	-						
	5	÷	N	-						
	6	÷	N	-						
	7	÷	N	-						
	8	÷	N	-						
	9	÷	N	-						
	10	÷	N	-						
	11	÷	N	-						
	12	÷	N	-						
	13	÷	N	-						
	14	÷	N	-						
	15	÷	N	-						
	16	÷	N	-						
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	19	÷	N	-						
	20	÷	N	-						
	21	÷	N	-						
	22	÷	N	-						
	23	÷	N	-						
	24	÷	✓	-						
	25	÷	✓	-						
	26	÷	✓	-						
	27	÷	✓	-						
	28	÷	✓	-						
	29	÷	✓	-						
	30	÷	✓	-						
	31	÷	✓	-						
	32	÷	✓	-						
	33		✓	-						
	34		✓	-						
	35			N						

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10553575	GHASSABIAN, BENJAMIN FIROOZ
	Examiner	Art Unit
	VINH T LAM	2629

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	07/30/2008	03/31/2009	11/09/2009						
	36			N						
	37			N						
	38			N						
	39			N						
	40			N						
	41			N						
	42			N						
	43			N						
	44			N						
	45			N						
	46			N						
	47			N						
	48			N						
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	66			N						
	67			N						
	68			N						
	69			N						
	70			N						

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
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	Examiner	Art Unit
	VINH T LAM	2629

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	07/30/2008	03/31/2009	11/09/2009						
	71			N						
	72			N						
	73			N						

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0 8 DEC 2009

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624 Ninth Street, Nw
Suite 300
Washington DC 20001-5303

In re Application of :
GHASSABIAN et al. :
Application No.: 10/553,575 :
Filed: September 26, 2006 : DECISION ON PETITION
Attorney Docket No.: GHASSABIAN12 :
For: SYSTEMS TO ENHANCE DATA ENTRY : IN MOBILE AND FIXED : ENVIRONMENT

This is a decision on the petition under 37 CFR 1.78(a)(3), filed July 14, 2009, to accept an unintentionally delayed claim under 35 U.S.C. §120 for the benefit of priority to the prior-filed nonprovisional applications set forth in the Application Data Sheet (ADS) filed concurrently with the instant petition.

The petition under 37 CFR 1.78(a)(3) is DISMISSED.

The present nonprovisional application was filed after November 29, 2000, and the claim herein for the benefit of priority to the prior-filed nonprovisional application is submitted after expiration of the period specified in 37 CFR 1.78(a)(2)(ii). Therefore, this is a proper petition under 37 CFR 1.78(a)(3).

A petition for acceptance of a claim for late priority under 37 CFR §1.78(a)(3) is only applicable to those applications filed on or after November 29, 2000. Further, the petition is appropriate only after the expiration of the period specified in 37 CFR § 1.78(a)(2)(ii). In addition, the petition under 37 CFR § 1.78(a)(3) must be accompanied by:

(1) the reference required by 35 U.S.C. §120 and 37 CFR §1.78(a)(2)(i) of the prior-filed application, unless previously submitted;
(2) the surcharge set forth in § 1.17(t); and
(3) a statement that the entire delay between the date the claim was due under 37 CFR §1.78(a)(2)(ii) and the date the claim was filed was unintentional. The Director may require additional information where there is a question whether the delay was unintentional.

As to item (1), the petition does not comply with the requirements for a grantable petition under 37 CFR §§1.78(a)(3), in that, a proper reference to the prior-filed applications has not been included in an amendment to the first sentence of the specification following the title or in an executed supplemental Application Data Sheet, as provided by 37 CFR §§ 1.78(a)(2)(iii).

Applicant is advised that a supplemental application data sheet (ADS) must bear a proper signature as required by 37 CFR 1.33(b). The ADS submitted with the present petition does not bear a proper signature as required by 37 CFR 1.33(b). Form PTO/SB/14 contains an appropriate signature block and can be obtained at http://www.uspto.gov/ebc/portal/efs/sb0014.fill.pdf. Applicant is further advised that a supplemental ADS must be titled in accordance with 37 CFR 1.76(c)(2). Therefore, before the petition under 37 CFR § 1.78(a)(3) can be granted, a renewed petition and either an Application Data Sheet (37 CFR 1.76(a)(5)) or a proper amendment (complying with the provisions of 37 CFR 1.121) to correct the above matters must be filed in the present application.

Any questions concerning this matter may be directed to Anthony Smith at (571) 272-3298.

Any further correspondence with respect to this matter may be filed electronically via EFS-Web selecting the document description "Petition for review and processing by the PCT Legal Office" or by mail addressed to Mail Stop PCT, Commissioner for Patents, Office of PCT Legal Administration, P.O. Box 1450, Alexandria, Virginia 22313-1450, with the contents of the letter marked to the attention of the Office of PCT Legal Administration

Bryan Lin

Bryan Lin
Legal Examiner
PCT Legal Administration

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Atty. Docket: GHASSABIAN 12

In re Application of:	)	Conf. No.: 7464
Benjamin Firooz GHASSABIAN et al.	)	Art Unit: 2629
Appln. No.: 10/553,575	)	Examiner: V. T. LAM
Filing Date: September 26, 2006	)	Washington D.C.
For: SYSTEMS TO ENHANCE DATA ENTRY IN MOBILE AND FIXED ENVIRONMENT	)	December 29, 2009

RENEWED PETITION UNDER 37 CFR §1.78(a)(3)

U.S. Patent and Trademark Office
Customer Service Window
Randolph Building, Mail Stop **Petition**
401 Dulany Street
Alexandria, VA 22314

Sir:

On July 14, 2009, applicant submitted a Petition Under 37 CFR §1.78(a)(3) To Accept An Unintentionally Delayed Claim Under 35 USC §120 For The Benefit Of A Prior-Filed Application. On December 8, 2009, a Decision on Petition was rendered, dismissing applicant's petition on the ground that a proper reference to the prior filed application had not been included. The rationale was that the supplemental application data sheet (ADS) was inoperative because it did not bear a proper signature as required by 37 CFR §1.33(b). The decision states that before the petition can be granted, a renewed petition and either an application data sheet or proper amendment to the specification must be filed in the present application.

Applicant hereby renews its petition of July 14, 2009. While a new application data sheet is submitted herewith, including a signature as required by the Legal

Examiner, applicant nevertheless traverses the refusal to grant the original petition as (1) the ADS was in accordance with the PTO's own published guidelines for submission of an ADS, and (2) the combination of a signed transmittal letter and an ADS should be considered a single "paper" for purposes of 37 CFR 1.33(b).

Attached hereto is a document entitled "Patent Application Data Sheet Format: Guide for Submitting Bibliographic Data for Patent Applications" dated April 14, 2003. This document is presently accessible on the PTO web site at: http://www.uspto.gov/web/offices/pac/dapp/sir/doc/adsguidelines.pdf. It should be noted that nowhere in this 68 page document teaching how to file application data sheets is there any indication that a signature is required. The data entry format examples begin at page 12 and run through page 24. None of these examples have a signature or a place for a signature. Applicant's Supplemental ADS submitted on July 14, 2009, fully complies with the guidelines set forth in this document.

The Patent and Trademark Office has never advised the patent bar that it has changed its position as to the necessity of a signature on application data sheets. The fact that the new ADS form placed on the PTO website includes a place for a signature is not notice to the patent bar that the PTO now considers the previously published guidelines to be wrong and not to be followed in the future in the preparation of Application Data Sheets. At most it indicates a preference that the ADS be signed directly.

It is understood that 37 CFR §1.33(b) states that "amendments and other papers … filed in the application must be signed by…." But this does not mean that literally every single paper filed in an application must be signed. When a priority document is filed, which is an "other paper filed in the application," it is not signed by the practitioner. Usually

a cover paper is transmitted with the document and signed by the practitioner. This has always been considered to be acceptable.

When new or amended drawings are filed in an application, the drawings are not signed by the practitioner. Rather an amendment is filed that directs entry of the enclosed new or substitute sheets.

When foreign patents or non-patent literature are filed with an IDS, each of those papers need not be signed. The accompanying signed IDS is sufficient.

Clearly 1.33(b) has been interpreted as permitting the combination of a signed transmittal with an unsigned enclosure. The term "other papers," as used in this rule, could also be reasonably interpreted as meaning "other papers that require a signature." The rule is not about what papers need signature. The rule is about who is permitted to sign a paper that requires a signature. By either interpretation, the fact that the PTO guidelines for submitting Application Data Sheets, attached hereto, do not require a signature is evidence that the PTO at one time interpreted this rule as not requiring a signature on an ADS.

In this case, there was a transmittal letter submitting the ADS which was signed by a practitioner. A copy of the transmittal letter filed on July 14, 2009, is attached hereto. It can be seen from the first line that it refers to the amendment, the petition and the supplemental application data sheet that were transmitted on July 14, 2009. The signature on the transmittal letter should be considered to be the signature on the ADS, for the same reason that it would have been considered to be the signature on submitted new drawings or submitted priority application, or a submitted IDS document.

If the USPTO wants to change the procedure originally set forth in the attached guidelines, it should publish this fact and give practitioners an opportunity to change their practices. By refusing to accept the ADS submitted with the petition, a precedent has

been set which effectively rules that every ADS ever filed without a direct signature is ineffective for lack of a signature, even when submitted with a signed transmittal letter. This could create significant new fodder to all future patent litigations. We believe that this would affect many cases filed by many practitioners.

Accordingly, it is requested that the decision of December 8, 2009, be reconsidered and the ADS submitted with applicant's submission of July 14, 2009, with a transmittal letter that was signed by a practitioner be accepted. Browdy and Neimark has now changed its ADS form to include a signature block, as on the attached signed form. In the future, Browdy and Neimark will submit all Application Data Sheets with a signature, as a best practice. However, this is not a concession that Browdy and Neimark believes that all previously submitted Application Data Sheets that are not directly signed are inoperative.

Out of an abundance of caution, a new ADS is submitted herewith, that is signed in the manner required in the original decision of December 8, 2009. Accordingly, the present petition must be granted, whether or not the previous decision is reversed.

Granting of this renewed petition and according of the present application the benefit of the prior filed application identified in the original petition, and the provisional applications from which it in turn claims benefit, are therefore earnestly solicited.

Respectfully submitted,

BROWDY AND NEIMARK, P.L.L.C.
Attorneys for Applicant(s)

By /rlb/
Roger L. Browdy
Registration No. 25,618

RLB/jhw
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G:\BN\B\bend\ghassabian12\pto\2009-12-29Petitiion.doc

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of: Benjamin Firooz GHASSABIAN et al.

Art Unit: 2629

Application No.: 10/553,575 Conf. No. 7464

Examiner: Vinh Tang Lam

Filed: September 26, 2006

Washington, D.C.

For: SYSTEMS TO ENHANCE DATA ENTRY IN MOBILE AND FIXED ENVIRONMENT

Atty.'s Docket: GHASSABIAN12

Date: July 14, 2009

Honorable Commissioner for Patents
U.S. Patent and Trademark Office
Customer Service Window
Randolph Building, Mail Stop **Amendment**
401 Dulany Street
Alexandria, VA 22314

Sir:

Transmitted herewith is a [XX] Amendment [XX] Petition Under 37 CFR §1.78(a)(3) and Supplemental Application Data Sheet in the above-identified application.

[XX] Small Entity Status: Applicant(s) claim small entity status. See 37 C.F.R. §1.27.

[XX] Petition fee of $1,410.00 as required by 37 CFR §1.17(t).

[XX] The fee has been calculated as shown below:

	(Col. 1) CLAIMS REMAINING AFTER AMENDMENT		(Col. 2) HIGHEST NO. PREVIOUSLY PAID FOR	(Col. 3) PRESENT EXTRA EQUALS	SMALL ENTITY RATE	SMALL ENTITY ADDITIONAL FEE	OR	OTHER THAN SMALL ENTITY RATE	OTHER THAN SMALL ENTITY ADDITIONAL FEE
TOTAL	* 39	MINUS	** 34	5	x 26	$ 130.00		x 52	$
INDEP.	* 3	MINUS	*** 5	0	x 110	$		x 220	$
FIRST PRESENTATION OF MULTIPLE DEP. CLAIM					+ 195	$		+ 390	$
					ADDITIONAL FEE TOTAL	$ 130.00	OR	TOTAL	$

* If the entry in Col. 1 is less than the entry in Col. 2, write "0" in Col. 3.

** If the "Highest Number Previously Paid for" IN THIS SPACE is less than 20, write "20" in this space.

*** If the "Highest Number Previously Paid for" IN THIS SPACE is less than 3, write "3" in this space.

The "Highest Number Previously Paid For" (total or independent) is the highest number found from the equivalent box in Col. 1 of a prior amendment of the number of claims originally filed.

[XX] Conditional Petition for Extension of Time

If any extension of time for a response is required, applicant requests that this be considered a petition therefor.

[ ] It is hereby petitioned for an extension of time in accordance with 37 CFR 1.136(a). The appropriate fee required by 37 CFR 1.17 is calculated as shown below:

Small Entity Response Filed Within		Other Than Small Entity Response Filed Within	
[ ] First	- $ 65.00	[ ] First	- $ 130.00
[ ] Second	- $ 245.00	[ ] Second	- $ 490.00
[ ] Third	- $ 555.00	[ ] Third	- $ 1110.00
[ ] Fourth	- $ 865.00	[ ] Fourth	- $ 1730.00
Month After Time Period Set		Month After Time Period Set	

[ ] Less fees ($_____) already paid for ___ month(s) extension of time on _____.

[ ] Please charge my Deposit Account No. 02-4035 in the amount of $_____.

[XX] Credit Card authorization is submitted herewith, authorizing payment in the amount of $ 1,540.00.

[ ] A check in the amount of $_____ is attached (check no.).

[XX] The Commissioner is hereby authorized and requested to charge any additional fees which may be required in connection with this application or credit any overpayment to Deposit Account No. 02-4035. This authorization and request is not limited to payment of all fees associated with this communication, including any Extension of Time fee, not covered by check or specific authorization, but is also intended to include all fees for the presentation of extra claims under 37 CFR §1.16 and all patent processing fees under 37 CFR §1.17 throughout the prosecution of the case. This blanket authorization does not include patent issue fees under 37 CFR §1.18.

BROWDY AND NEIMARK, P.L.L.C.

Attorneys for Applicant(s)

Facsimile: (202) 737-3528
Telephone: (202) 628-5197

By: /rlb/
Roger L. Browdy
Registration No. 25,618

Patent Application Data Sheet Format

Guide for Submitting
Bibliographic Data for Patent Applications

ADS Version 5 Rev. 4/15/2003

C O N T E N T S

Revisions – Summary of Changes

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Guidance on Foreign Addresses

Paperwork Reduction Act Notice

This information collection is subject to the Paperwork Reduction Act of 1995 (44 U.S.C. § 3501 *et seq.*), and has been reviewed by the Office of Management and Budget (OMB) under OMB control number 0651-0032 and is approved through October 30, 2002. This collection of information is required by 35 U.S.C. §§ 111, 112, 113, 115, 119, and 120. The Patent Application Data Entry Format is used by the public to submit bibliographic information to the USPTO. Use of this voluntary format allows the USPTO to process the bibliographic information easily and efficiently. This information will be treated confidentially in accordance with 35 U.S.C. § 122 and 37 C.F.R. § 1.14. It is estimated to take twelve minutes to review the user guide and submit the bibliographic information. The time may vary depending upon the needs of the individual case. Any comments on the amount of time you require to complete this format and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, D.C., 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, D.C., 20231.

Notwithstanding any other provision of law, no person is required to respond to nor shall a person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a currently valid OMB control number.

Samsung Exhibit 1006, Page 700 of 1063

R E V I S I O N S – Summary of Changes

Version 1 of this Guide was widely distributed between April 1998, and October 1998. Version 2 was modified in December 1998. Based on suggestions and experience of applicants and USPTO's review of the effectiveness of the previous Patent Application Data Sheets already submitted by applicants, and recent changes to the USPTO rules of practice, the guidelines have been further revised. While these modifications will improve accuracy, previous Guide versions will still be acceptable until January 2002. Previous versions of the Guide will not be acceptable for Application Data Sheets filed on or after January 2002.

Application Data Sheets in compliance with this guide will satisfy the requirements of 37 CFR 1.76.

It is noted that 37 CFR 1.76(c)(2) states that a supplemental Application Data Sheet (ADS) may contain only information that is changed and added and that these guidelines recommend filing a complete ADS even when filing a supplemental ADS. A supplemental ADS containing only new or changed information is likely to confuse the record, creates unnecessary work for the Office, and is not recommended.

Version 3 & 4 revisions were so extensive that a summary of revisions would have been more confusing than useful. Version 4 eased the restrictiveness of many of the old format requirements and includes many new elements. Further, version 4 of this format covered follow-on and modified submissions of the Application Data Sheet after initial filing.

Version 5 makes one minor change. On p.10, under the Domestic Priority section, Continuity Type **::** field, the type "a non-provisional of" has been changed to "an application claiming the benefit under 35 USC 119(e)". This has also been changed in the example on P. 19.

T H E D A T A E N T R Y F O R M A T

Patent Application Data Sheet Format

THE Patent Application Data Sheet is designed to more effectively turn a customer's paper document into an electronic USPTO data record.

Customers using the Patent Application Data Sheet can expect two advantages when applying for a patent:

1. Improved accuracy of filing receipts. The need for corrected filing receipts related to USPTO errors will be significantly reduced.

2. Accurately recorded application data. This will also reduce application prosecution delays and will improve the accuracy of bibliographic data in patent application publications.

The top of a Patent Application Data Sheet should begin with the heading:

Application Data Sheet

For bibliographic information, the format includes seven section headings:

Application Information

Applicant Information

Correspondence Information

Representative Information

Domestic Priority Information

Foreign Priority Information

Assignment Information

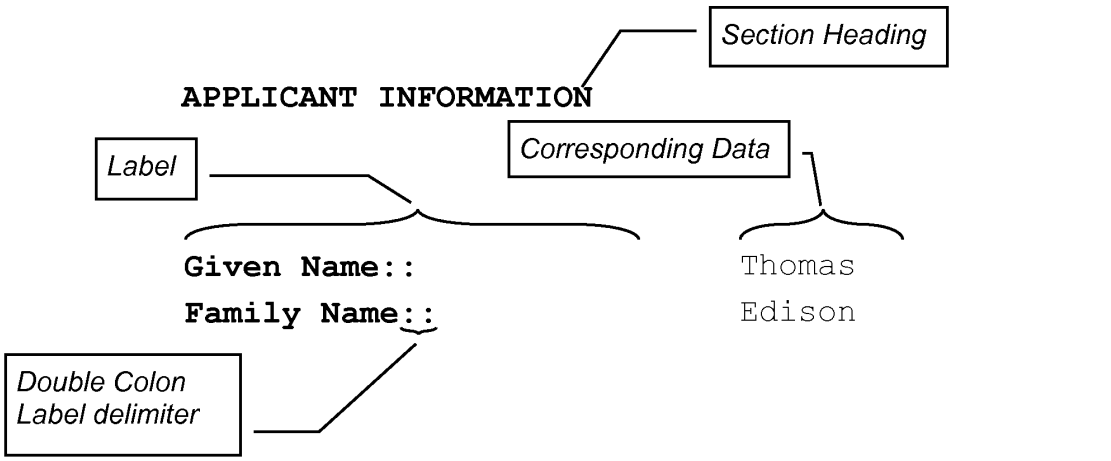
Every applicant should supply the information listed in the first three sections: **Application Information**, **Applicant Information, Correspondence Information**. In many cases the Application Data Sheet will be complete with just this information. An ADS must be clearly labeled, begin on a new page, and may not contain any other application data (i.e., abstract, amendments, transmittal letter, etc.).

Information identified in the **Representative Information**, **Domestic Priority Information, Foreign Priority Information** and **Assignee Information** sections will not necessarily apply to all applications.

For each section included in the patent application data sheet, the customer must type:

1. A section heading
2. A label for each data item which includes:
    a. a double colon label delimiter
    b. data corresponding to the label

See the format diagram below.



Format Diagram

Any data for the application, which has a label in this Guide, should be included on the Application Data Sheet even if it is duplicates data on other papers in the application.

Any section or label information which does not apply to the specifics of this application does not need to be listed on the Application Data Sheet. However, it may be included with the data portion left blank. For example, if there is no assignee, then do not include the **Assignment Information** section on the ADS.

Labels which are included with the data portion left blank will be interpreted to mean that there is no data for that label anywhere in the application.

Supplemental ADS Submissions

When submitting the Application Data Sheet supplemental to the initial filing of the application, to correct, modify, or augment the original Application data sheet, the following applies:

1. The supplemental Application Data Sheet should be labeled "Supplemental Application Data Sheet"

2. A full replacement copy of the original Application Data Sheet should be submitted with any changes or additions underlined. For deletions without replacement data, use ~~strikethrough~~.

3. The footer information should include the word "**Supplemental**" in place of "**Initial**" and should also contain the **Application Number** and **Filing Date**.

When preparing information in the Patent Application Data Sheet, keep these points in mind:

- The only section headings and labels that must appear on your Application Data Sheet are those for which you have corresponding data. You may include labels with blank data fields, if desired.
- Each section heading must be on a separate line.
- Each label must be on a separate line.
- Each item of data provided must start with a label to the left. In other words, if a single piece of information, such as title requires multiple lines, the first line must begin with its own label to the left.
- Section headings and labels must be typed exactly as designated in the format.
- Section headings and labels are not case sensitive. (*i.e., All capital letters or initial capitals are permitted*.)
- The corresponding data for each label must be limited to the maximum length stated in this Guide. **This limit include spaces and punctuation.**
- Technical Document Format requirements are listed in Appendix A.
- Document Footers should include page number, "**Initial**", and date for Initial Applications.

The next pages explain in detail the format elements and how each should be entered.

Application Data Sheet
Application Information

Application number::	*8 digits*
Filing Date::	*8 characters, MM / DD / YY*
Application Type::	***Regular**, **Provisional**, **Reexamination**, or **Reissue***
Subject Matter::	***Utility**, **Design**, or **Plant***
Suggested classification::	*No more than 40 characters*
Suggested Group Art Unit::	*No more than 6 characters*
CD-ROM or CD-R?::	***Table, Listing,** or **None***
Number of CD disks::	*No more than 3 digits*
Number of copies of CDs::	*No more than 2 digits*
Sequence submission?::	***CD** or **Paper***
Computer Readable Form (CRF)?::	***Yes** or **No***
Number of copies of CRF::	*No more than 2 digits*
Title ::	*No more than 500 characters*
Attorney Docket Number::	*No more than 25 characters*
Request for Early Publication?::	***Yes** or **No***
Request for Non-Publication?::	***Yes** or **No***
Suggested Drawing Figure::	*No more than 4 characters*
Total Drawing Sheets::	*No more than 4 numbers*
Small Entity?::	***Yes** or **No***
Latin name::	*No more than 40 characters*
Variety denomination name::	*No more than 40 characters*
Petition included?::	***Yes** or **No***
Petition Type::	*No more than 40 characters*
Licensed US Govt. Agency::	*No more than 40 characters*
Contract or Grant Numbers::	*No more than 40 characters*
Secrecy Order in Parent Appl.?::	***Yes** or **No***

For supplemental data sheets only (after initial filing).

Enter the U.S. classification, by class and subclass, e.g., 280/736

***Docket Number** refers to any application identifier not more than 25 characters long, which is assigned by the attorney or agent or the inventor.*

If non-publication is requested, must include signed statement certification under 35 USC 122(b)(2)(B)(i)

Enter the figure that is recommended to be used for any patent application publication of patent front page.

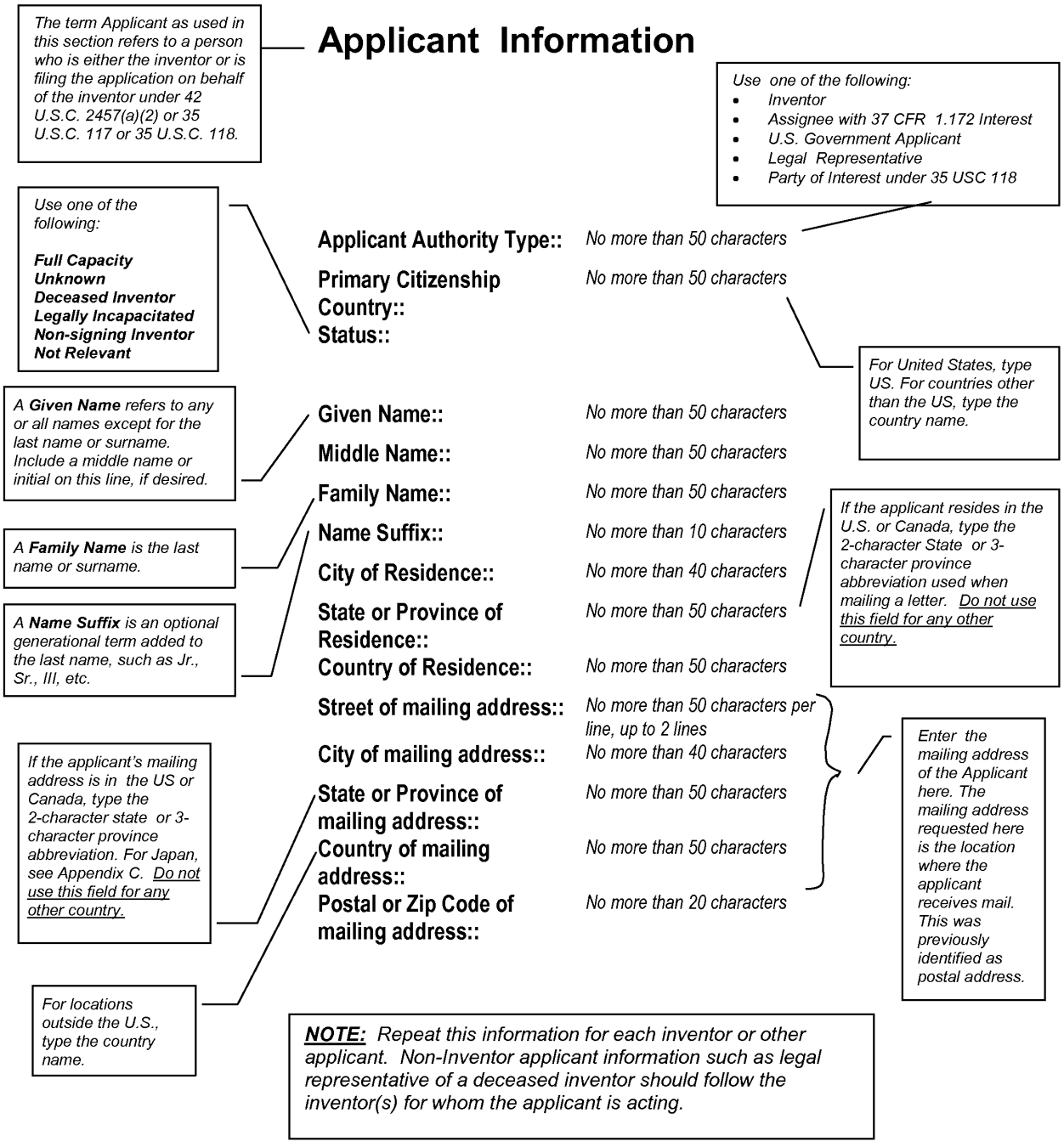
***Rule 37 C.F.R. 5.2**, states that if an invention has been determined to be a matter of national security, the Director of Patents & Trademarks has the right to keep the invention secret. Under the same rule, applicants are obligated to notify the Office of any related cases which the Commissioner has kept secret.*

Enter the total number of sheets of drawings as a numeral

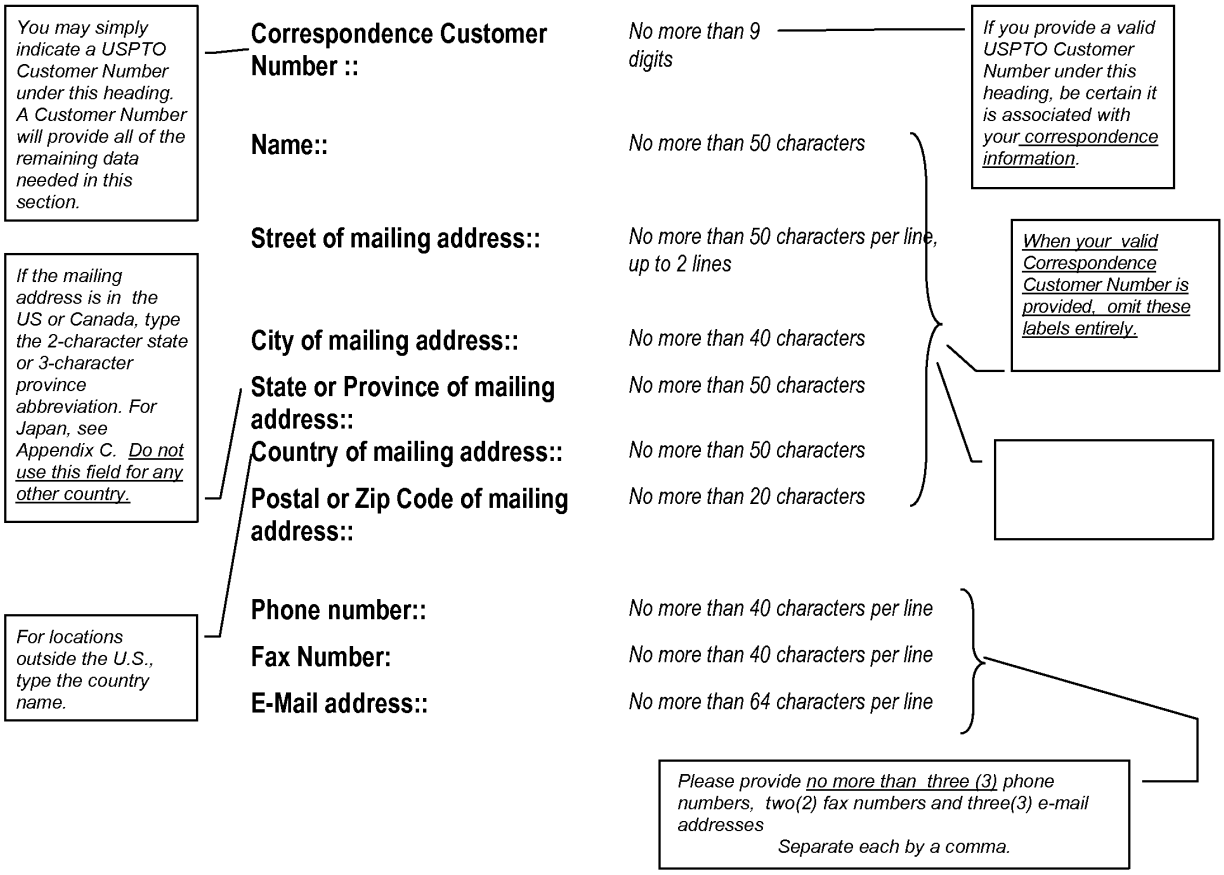
Only used for Plant Applications

Brief description of type of petition including appropriate authority (CFR, USC, MPEP, etc.)

Where a Government contractor retains U.S. domestic patent rights, the contractor is required to include the name of the U.S. Government agency and the Government contract number or grant number. (See MPEP § 310)


The term Applicant as used in this section refers to a person who is either the inventor or is filing the application on behalf of the inventor under 42 U.S.C. 2457(a)(2) or 35 U.S.C. 117 or 35 U.S.C. 118.
Applicant Information
Use one of the following:
• Inventor
• Assignee with 37 CFR 1.172 Interest
• U.S. Government Applicant
• Legal Representative
• Party of Interest under 35 USC 118
Use one of the following:
Full Capacity
Unknown
Deceased Inventor
Legally Incapacitated
Non-signing Inventor
Not Relevant
Applicant Authority Type:: No more than 50 characters
Primary Citizenship Country:: No more than 50 characters
Status::
For United States, type US. For countries other than the US, type the country name.
A Given Name refers to any or all names except for the last name or surname. Include a middle name or initial on this line, if desired.
Given Name:: No more than 50 characters
Middle Name:: No more than 50 characters
Family Name:: No more than 50 characters
A Family Name is the last name or surname.
Name Suffix:: No more than 10 characters
A Name Suffix is an optional generational term added to the last name, such as Jr., Sr., III, etc.
City of Residence:: No more than 40 characters
State or Province of Residence:: No more than 50 characters
Country of Residence:: No more than 50 characters
If the applicant resides in the U.S. or Canada, type the 2-character State or 3-character province abbreviation used when mailing a letter. Do not use this field for any other country.
Street of mailing address:: No more than 50 characters per line, up to 2 lines
City of mailing address:: No more than 40 characters
State or Province of mailing address:: No more than 50 characters
Country of mailing address:: No more than 50 characters
Postal or Zip Code of mailing address:: No more than 20 characters
Enter the mailing address of the Applicant here. The mailing address requested here is the location where the applicant receives mail. This was previously identified as postal address.
If the applicant's mailing address is in the US or Canada, type the 2-character state or 3-character province abbreviation. For Japan, see Appendix C. Do not use this field for any other country.
For locations outside the U.S., type the country name.
NOTE: Repeat this information for each inventor or other applicant. Non-Inventor applicant information such as legal representative of a deceased inventor should follow the inventor(s) for whom the applicant is acting.

Correspondence Information



NOTE: For information concerning the Customer Number practice, see the notice "Extension of the Payor Number Practice (Through Customer Numbers) to matters Involving Pending Patent Applications," published in the *Federal Register* at 61 *Fed. Reg.* 54622 (October 21, 1996), and in the *Official Gazette* at 1191 *Off. Gaz Pat. Office* 187 (October 29, 1996).

This section modifies the general format of the Application Data Sheet to facilitate an easier documentation of Representative Information in a tabular form.

Representative Information

Your Customer Number will provide all of the data required under this heading.

If you provide a valid USPTO Customer Number here, be certain it is associated with your representative information.

Representative Customer Number::	*No more than 9 digits*	

-OR-

If a Customer Number is not indicated, identify each representative's registration number with a designation of Primary or Associate., and the representative's name.

If a Customer Number is supplied, do not provide any individual registration numbers.

*Note: Providing this information in the ADS **does not** constitute a power of attorney or authorization of agent in the application. See 37 CFR 1.76(b)(4).*

Representative Designation::	Registration Number::	Representative Name::
Primary** or **Associate	*No more than 5 digits*	*No more than 50 characters*

This section modifies the general format of the Application Data Sheet to facilitate an easier documentation of Domestic Priority in a tabular form.

Domestic Priority Information

Application ::	Continuity Type::	Parent Application::	Parent Filing Date::
		no more than 20 characters	*8 characters, MM / DD / YY*

*Enter **This Application** if the priority applies directly to the application being filed.*

Enter the Application Number if the priority refers to a previously filed application, which is in turn related to the application being filed.

Enter the Parent Application number on which priority is claimed.

Enter one of the following:

Continuation of
Continuation-in-part of
Division of
An application claiming the benefit under 35 USC 119(e)
National Stage of
Reissue of
Reexamination of
Substitution for

***NOTE:** Use a new line for each priority claimed*

***NOTE:** Providing the domestic priority information on the ADS satisfies the specific reference requirement of 35 U.S.C. 119(e) and 120 (e.g. if an ADS includes reference to a prior U.S. application, the first sentence of the specification does not need to be amended to contain the specific reference). See 37 CFR 1.76(b)(5)*

This section modifies the general format of the Application Data Sheet to facilitate an easier documentation of Foreign Priority in a tabular form.

Foreign Priority Information

Country::	Application number::	Filing Date::	Priority Claimed::
up to 50 characters	*up to 20 characters*	*8 characters, MM / DD / YY*	*Yes or No*

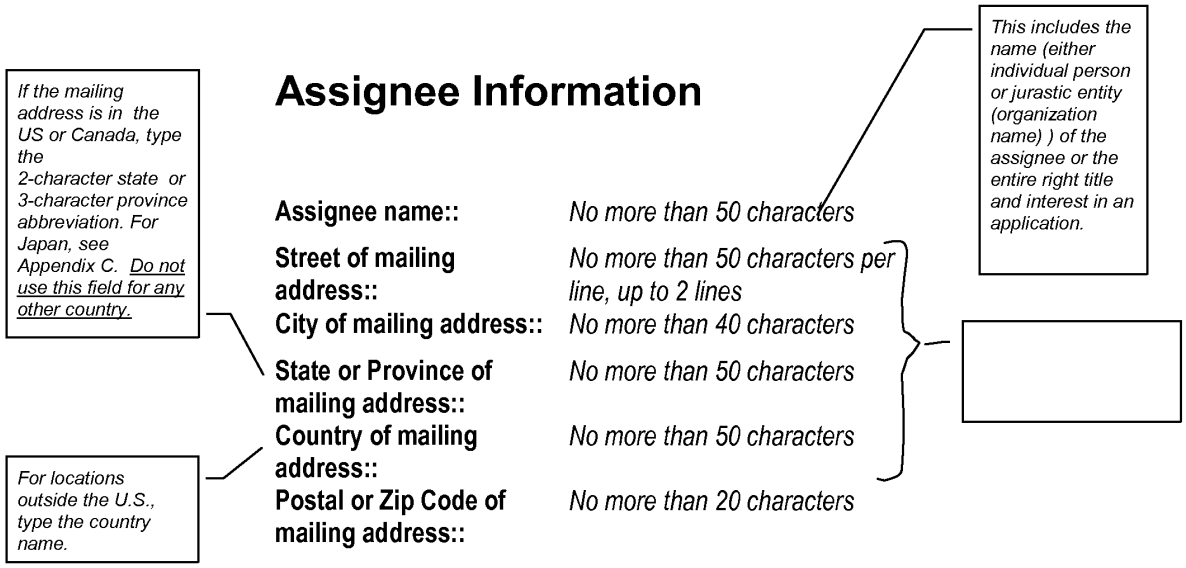
See Appendix B for specific instructions on the correct numbering, by country, of Foreign patent applications.

Although prior foreign applications that are not relied upon for priority may be included in an application data sheet (see 37 CFR 1.63(c)(2)), it is desirable for such an application to be addressed in the declaration instead.

NOTE: *Use a new line for each priority claimed*

NOTE: *Providing foreign priority information in the Application Data Sheet constitutes the claim for foreign priority required by 35 U.S.C. 119(b) and 37 CFR 1.55(a).*

Assignee Information should be provided on the Application Data Sheet only for the purpose of indicating what should be printed on the Published application. The address information is optional.



NOTE: *If there is more than one assignee, this information should be repeated for each one.*

NOTE: *Assignment information provided an ADS **will not** be officially recorded for this application. Assignment Information is considered recorded when submitted as provided in Title 37, Section 3. Assignment information submitted on an ADS only results in the assignment information being included on the patent application publication.*

D A T A E N T R Y F O R M A T E X A M P L E S

[The header and footer information and pagination could not be shown in the examples directly but is included at the end of each example]

Example 1 (Initial ADS for an application with one inventor having representation)

Application Data Sheet

Application Information

Application Type::	Regular
Subject Matter::	Utility
Suggested Classification::	280/7
Suggested Group Art Unit::	1640
CD-ROM or CD-R?	None
Title::	Handling and Eating Utensils for use with Broiled or Boiled Mussels and other Shellfish that inhabit the various cold water, non-coastal areas of the Ocean continental shelf.
Attorney Docket Number::	Jones01-2349
Request for Early Publication?::	No
Request for Non-Publication?::	No
Suggested Drawing Figure::	7
Total Drawing Sheets::	6
Small Entity::	No
Petition included?::	No
Secrecy Order in Parent Appl.?::	No

Applicant Information

Applicant Authority type::	Inventor

Page # 1 Initial 03/21/01

Primary Citizenship Country:	US
Status::	Full Capacity
Given Name::	Maximillian
Middle Name::	Algonquin
Family Name::	Katch
City of Residence::	Falls Church
State or Province of Residence::	VA
Country of Residence::	US
Street of mailing address::	716 My Place
	Apt. 3
City of mailing address::	New York
State or Province of mailing address::	NY
Postal or Zip Code of mailing address::	10013

Correspondence Information

Name::	Mister Jones & Associates
Street of mailing address::	875 Busy Avenue
	Suite 740
City of mailing address::	New York
State or Province of mailing address::	NY
Postal or Zip Code of mailing address::	10012
Telephone::	(212) 555-9283, (212)555-9300
Fax::	(212) 555-4321

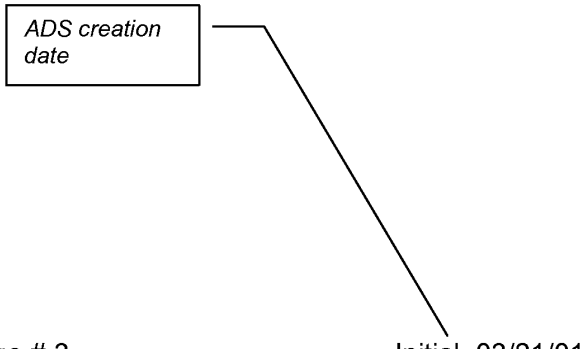
Representative Information

Representative Designation::	Registration number::	Name::

Samsung Exhibit 1006, Page 714 of 1063

Primary	99001	Franklin D. Harbour, Esq.
Associate	99143	Seymour O. Clock
Associate	79023	Theold Mann

[This application has no priority claims or assignee data]



Page # 3 Initial 03/21/01

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Example 2 (Initial ADS for an application with Independent Inventors without representation)

Application Data Sheet

Application Information

```
Application Type::            Regular
Subject Matter::              Utility
Suggested Classification::    410/167.8
Suggested Group Art Unit::    3210
CD-ROM or CD-R?               None
Title::                       Safety Belt for a skateboard
Attorney Docket Number::      A4Z01
Request for Early Publication?::   No
Request for Non-Publication?::     No
Suggested Drawing Figure::         1
Total Drawing Sheets::             2
Small Entity::                     Yes
Petition included?::               No
Secrecy Order in Parent Appl.?::   No
```

Applicant Information

```
Applicant Authority type::    Inventor
Primary Citizenship Country:  US
Status::                      Full Capacity
Given Name::                  Mach
Middle Name::                 A
Family Name::                 Speed
City of Residence::           Akron
State or Province of Residence:: OH
Country of Residence::        US
Street of mailing address ::  Oberstrasse 17/2a
                              Muchstadt
                                Page #1         Initial  03/21/01
City of mailing address::     Skieff
```

```
Country of mailing address::  Austria
Postal or Zip Code of mailing address:: Zonas 143
Applicant Authority type::    Inventor
Primary Citizenship Country:  US
Status::                      Full Capacity
Given Name::                  Ethel
Middle Name::                 Ogosh
Family Name::                 Propell
City of Residence::           Cleveland
State or Province of Residence:: OH
Country of Residence::        US
Street of mailing address::   415 Mappgas Street
City of mailing address::     Cleveland
State or Province of mailing address::  OH
Postal or Zip Code of mailing address:: 14332
```

Correspondence Information

```
Name::                              Ms. Ethel O. Propell
Street of mailing address::         P.O. Box 7345
                                    Central Station
City of mailing address::           Cleveland
State or Province of mailing address::  OH
Postal or Zip Code of mailing address:: 14343
Telephone::              (367) 407-7865
E-Mail address::         Fastone@aol.com
```

[This application has no priority claims or assignee data]

```
                                Page # 2         Initial  03/21/01
```

Example 3 (Initial ADS for an application using Customer Numbers, and having priority claims and Assignee Data)

Application Data Sheet

Application Information

Application Type::	Regular
Subject Matter::	Utility
Suggested Classification::	70/342.67
Suggested Group Art Unit::	1640
CD-ROM or CD-R?	None
Title::	Device for Planting and Cultivation of Corn and like plants
Request for Early Publication?::	No
Request for Non-Publication?::	No
Suggested Drawing Figure::	2
Total Drawing Sheets::	45
Small Entity::	No
Petition included?::	No
Secrecy Order in Parent Appl.?::	No

Applicant Information

Applicant Authority type::	Inventor
Primary Citizenship Country:	US
Status::	Full Capacity
Given Name::	Lester
Family Name::	Brainstorm

City of Residence::	Lincoln
State of Province of Residence::	NE

Country of Residence:: US

Street of mailing address:: RR 317 Box 15

City of mailing address:: Lincoln

State or Province of mailing address:: NE

Postal or Zip Code of mailing address:: 98765

Correspondence Information

Correspondence Customer Number:: 999999

Representative Information

Representative Customer Number:	123444

Domestic Priority Information

Application::	Continuity Type:	Parent Application::	Parent Filing Date::
This Application	Continuation of	09/912,354	01/22/98
09/912,354	*An application claiming the benefit under 35 USC 119(e)*	60/878265	06/07/97

Foreign Priority Information

Country::	Application Number::	Filing Date::	Priority Claimed::
France	FR199702347	07/23/97	Yes

Assignee Information

Assignee Name:: International Harvester, INC.

Example 4 (modified Example 2 - Initial ADS for an application with 2 Inventors, one deceased, a legal representative of the deceased inventor but no attorney or agent of record.)

Application Data Sheet

Application Information

```
Application Type::            Regular
Subject Matter::              Utility
Suggested Classification::    410/167.8
Suggested Group Art Unit::    3210
CD-ROM or CD-R?               None
Title::                       Safety Belt for a skateboard
Attorney Docket Number::      A4Z01
Request for Early Publication?::   No
Request for Non-Publication?::     No
Suggested Drawing Figure::         1
Total Drawing Sheets::             2
Small Entity::                     Yes
Petition included?::               No
Secrecy Order in Parent Appl.?::   No
```

Applicant Information

```
Applicant Authority type::    Inventor
Primary Citizenship Country:  US
Status::                      Full Capacity
Given Name::                  Mach
Middle Name::                 A
Family Name::                 Speed
City of Residence::           Akron
State or Province of Residence:: OH
Country of Residence::        US
Street of mailing address ::  Oberstrasse 17/2a
                              Muchstadt
                          Page # 1             Initial  03/21/01
City of mailing address::     Skieff
```

```
Country of mailing address::  Austria
Postal or Zip Code of mailing address:: Zonas 143
Applicant Authority type::    Inventor
Primary Citizenship Country:  US
Status::                      Deceased Inventor
Given Name::                  Ethel
Middle Name::                 Ogosh
Family Name::                 Propell
Applicant Authority type::    Legal Representative
Primary Citizenship Country:  US
Status::                      Full Capacity
Given Name::                  Karin
Middle Name::                 Tippon
Family Name::                 Propell
City of Residence::           Cleveland
State or Province of Residence:: OH
Country of Residence::        US
Street of mailing address::   415 Mappgas Street
City of mailing address::     Cleveland
State or Province of mailing address::  OH
Postal or Zip Code of mailing address:: 14332
```

Correspondence Information

```
Name::                              Ms. Karin T. Propell
Street of mailing address::         P.O. Box 7345
                                    Central Station
City of mailing address::           Cleveland
State or Province of mailing address::  OH
Postal or Zip Code of mailing address:: 14343
Telephone::              (367) 407-7865
E-Mail address::         Fastone@aol.com
```

[This application has no priority claims or assignee data

```
                          Page # 2            Initial  03/21/01
```

Example 5 (Supplemental submission of Application Data Sheet from Example 1 with modifications)

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Note: A supplemental ADS does not alone change the power of attorney in a application.

Application Information

Application Number::	09/998,345
Filing Date::	03/28/01
Application Type::	Regular
Subject Matter::	Utility
Suggested Classification::	280/7
Suggested Group Art Unit::	1640
CD-ROM or CD-R?	None
Title::	Handling and Eating Utensils for use with Broiled or Sautéed Mussels and other Shellfish that inhabit the various cold water, non-coastal areas of the Ocean continental shelf.
Attorney Docket Number::	Jones01-2349
Request for Early Publication?::	No
Request for Non-Publication?::	No
Suggested Drawing Figure::	7
Total Drawing Sheets::	6
Small Entity::	No
Petition included?::	No
Secrecy Order in Parent Appl.?::	No

Applicant Information

Applicant Authority type::	Inventor

Page #1 Supplemental 09998345 03/21/01 05/27/01

Primary Citizenship Country:	US
Status::	Full Capacity
Given Name::	Maximillian
Middle Name::	Algonquin

Family Name:: Katch
City of Residence:: Falls Church
State or Province of Residence:: VA
Country of Residence:: US
Street of mailing address:: 716 My Place
Apt. 3
City of mailing address:: New York
State or Province of mailing address:: NY
Postal or Zip Code of mailing address:: 10013

Correspondence Information

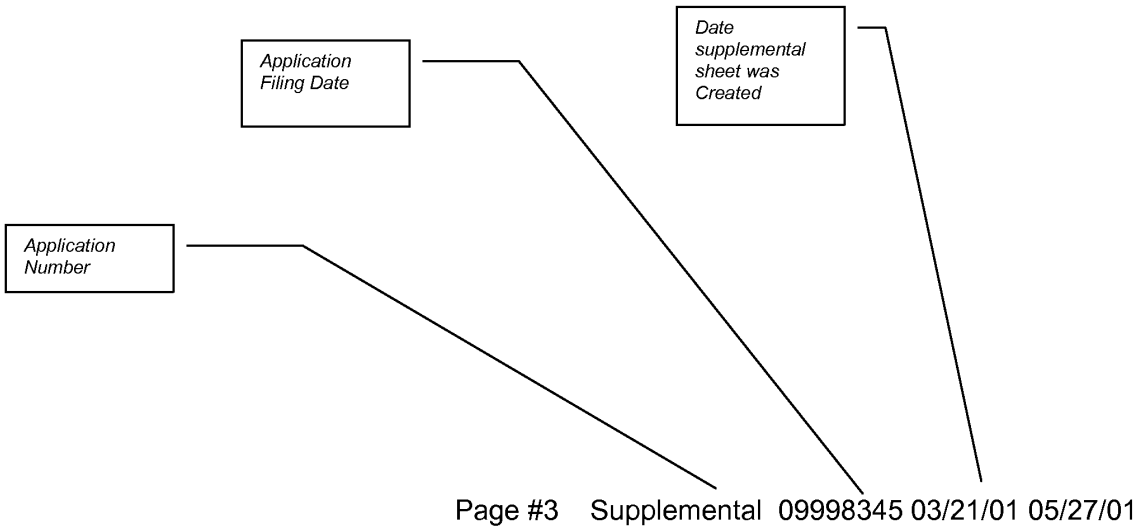
Name:: Mister Jones & Associates
Street of mailing address:: 1201 Avenue of the Americas
Suite 1506
City of mailing address:: Brunswick
State or Province of mailing address:: NY
Postal or Zip Code of mailing address:: 10034
Telephone:: (217) 545-9100
Fax:: (217) 545-9120

Representative Information

Representative Designation::	Registration number::	Name::
Primary	99001	Franklin D. Harbour, Esq.
Associate	99143	Seymour O. Clock

~~Associate~~	~~79023~~	~~Theold Mann~~

[This application has no priority claims or assignee data]



A P P E N D I X A

Technical Characteristics of the Application Data Sheet Format

THE following guidelines have been established to minimize errors in the scanning and text conversion of patent application information.

1. Paper Characteristics

General Requirements

No ADS shall include:

- wrinkles or creases
- rolls or folds
- erasures
- alterations
- overwriting
- printing on the reverse side of the paper
- staples
- non-white or thermal or fax paper
- handwriting

Specific Requirements

Paper Size	
Required:	8.5 x 11 inch or A4 (210 mm x 297 mm)
Not permitted:	Legal (8.5 x 14 inch) or any other size

2. Typography used in documents

General requirements

The characters should be created with a word processor or typewriter. Hand written characters are not permitted.

Specific requirements

Font/Character size

Recommended: 12 point or larger

Fonts

Recommended: Courier, Arial, Univers

Not Recommended:

OCR-A, OCR-B, Times New Roman, Gothic

Font Styles and Effects

Permitted: All capitals, upper and lower case, bold.
Underlining & strikeout only permitted on supplemental Application Data Sheet submissions.

Not permitted: Italic, small capitals, no shading or highlighting, reverse or negative printing.

Special Characters

Greek characters, mathematical characters, superscripts and subscripts are **not permitted**, except in the Title, Inventor Name, and Assignee Name fields.

NOTE:

- The numeral key "1" should be used for the number "one", and the letter key " l " should be used for the letter "ell."
- The letter key "O" should be used for the letter “O” and the numeral key "0" should be used for the numeric zero.
- The “@” symbol is required in an e-mail address.

3. Document Format

Margins

8.5 x 11 inch paper -
top: 1.25 inch (30 mm)
left side: 1.0 inch (25 mm)
right side: 0.75 inch (20 mm)
bottom: 0.75 inch (20 mm)

A4 paper -
top: 30 mm (1.25 inch)
left side: 25 mm (1.0 inch)
right side: 20 mm (0.75 inch)
bottom: 20 mm (0.75 inch)

Orientation

Required: Portrait - each page will be used in an upright position (i.e., short side at the top and bottom)

Not permitted: Landscape

Line Spacing

1.5 or double spacing

Hyphenation and Word Splitting

Hyphenations are permitted within a line, but not across lines. Word splitting at the end of a line by the use of hyphens is not permitted.

Page Numbering

All sheets shall be numbered in consecutive Arabic numerals. (e.g.: 1, 2, 3) Page numbers shall be located at the bottom center of each page.

Page Justification

All text will be left-justified. Right justification and full justification are not permitted.

4. Other Patent Application Data Sheet guidelines:

- **No** express mail stamps or certificates of mailing which obscure the data
- **No** extraneous typed, written information, or labels which obscure the data
- **No** line numbering
- **No** extraneous typed, written information, or labels in the left margin

A P P E N D I X B

Guidance on Foreign Application numbering for Foreign Priority Claims

The Appendix is provided to assist applicants in identifying foreign priority documents in a clear, unambiguous manner. The two tables provided are found in the WIPO (World Intellectual Property Organization) Handbook on Industrial Property Information and Documentation, specifically Standard ST. 10/C. The countries within the tables are divided into two categories which include (1) countries or organizations which have annual series of application numbers and (2) countries or organization which have other than annual series of application numbers. Numerous examples are provided within the tables.

By identifying the documents in a manner consistent with the tables, applicants can help the United States Patent and Trademark Office clearly identify the claim for foreign priority on the Application Data Sheet or other documents such as the oath or declaration.

TABLE I COUNTRIES OR ORGANIZATIONS HAVING ANNUAL SERIES OF APPLICATION NUMBERS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
AT (AUSTRIA)	A 1234/95	A 1234/95	1234/95	A = letter code characterizing a patent application number.
	GM 123/95	GM 123/95	123/95 U	GM = letter code characterizing a utility model application number. An annual number sequence in ascending order starting with 1 is used both for patent applications and utility model applications.

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TABLE I COUNTRIES OR ORGANIZATIONS HAVING ANNUAL SERIES OF APPLICATION NUMBERS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
BE (BELGIUM)	9200547	9200547	9200547	Numbering system used for all applications filed since January 1, 1987. Continuous numbering system according to the filing date; the first two digits indicate the last two numbers of the year of filing of the application.
BR (BRAZIL)	10432/72 (old numbering system)	10432/72	10432/72	Numbering system used from 1972 to 1975.
	PI 8300014-3 (new numbering system)	8300014	8300014	Numbering system introduced from 1975. The letters preceding the number denote the type of industrial property right:
	MU 6100132-2	6100132	6100132 U	PI = invention; MU = utility model. The first two digits indicate the last two numbers of the year of filing of the application and the type of industrial property right. The first digit denotes the number of the decade minus a control digit which is different for various kinds of documents, e.g., for PI-0, MU-2. Digits in positions 3 to 7 denote the serial number of the application given by the Brazilian Office. The digit in the last position is an error control digit.

TABLE I COUNTRIES OR ORGANIZATIONS HAVING ANNUAL SERIES OF APPLICATION NUMBERS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
CH (SWITZER-LAND)	01234/96-2	1234/96	1234/96	The two digits after the slash indicate the last two numbers of the year of filing of the application. The figure after the dash is a check digit.
CS (CZECHO-SLOVAKIA) (former)	PV 3628-72	3628-72	3628-72 or 3628/72	PV is an abbreviation meaning “application for protection of an invention.”
CU (CUBA)	1/85 (new numbering system)	1/85	1/85	As from 1985 an annual numbering system for applications is used. The two digits following the slash represent the last two digits of the year of filing of the application.

TABLE I COUNTRIES OR ORGANIZATIONS HAVING ANNUAL SERIES OF APPLICATION NUMBERS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
DE (GERMANY)	P 24 50 490.3-34 (old numbering system)	24 50 490	24 50 490	Old numbering system: P = letter code indicating a patent application number. The first two numerals represent the year of filing reduced by 50. The first digit after the full stop is a check digit. The two digits following the dash indicate the examination division in charge. The numerals 1 to 5 in the third position of the number indicate a national application. Used until the end of 1994.
	P 28 60 001.3 (old numbering system)	28 60 001		The numerals 6 to 8 in the third position indicate a patent granted by the EPO. Used for patents for which applications had been filed with the EPO until the end of 1988.
	P 33 90 001.9-25 (old numbering system)	33 90 001		The numeral 9 in the third position indicates a PCT application. Used until the end of 1994.
	G 94 00 001.8 (old numbering system)	94 00 001	94 00 001 U	G = letter code indicating utility model applications. The first two numerals represent the last two numbers of the year of filing of the application. Used until the end of 1994.

TABLE I COUNTRIES OR ORGANIZATIONS HAVING ANNUAL SERIES OF APPLICATION NUMBERS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
DE (cont'd)	195 00 002.1	195 00 002	195 00 002	New numbering system: The numerals in the second and third positions indicate the last two numbers of the year of filing of the application. The numeral in the first position indicates the type of industrial property right: 1 = national patent applications, PCT applications with Germany as a designated State and applications for SPCs (used since 1995). The range 75001 to 79999 each year is reserved for SPCs. The numerals 8 and 9 in the fourth position indicate PCT applications;
	295 00 001.5	295 00 001	295 00 001 U	2 = utility model applications and topographies (used since 1995). The range 00001 to 75000 each year is reserved for utility models, the range 75001 to 79999 relates to topographies, the range 80001 to 99999 to PCT applications;
	589 00 001.2	589 00 001		5 = patents granted by the EPO, filed in German (used for applications filed with the EPO from 1989);

TABLE I COUNTRIES OR ORGANIZATIONS HAVING ANNUAL SERIES OF APPLICATION NUMBERS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
	689 00 001.4	689 00 001		6 = patents granted by the EPO, filed in English or French (used for applications filed with the EPO from 1989). The last digit in position 9 after the dot is a check digit.
DK (DENMARK)	2986/68 (old numbering system)	2986/68	2986/68	Numbering system for patent applications. The two digits after the oblique stroke indicate the last two numbers of the year of filing of the application. Used until the end of 1997.
	9500242 (old numbering system)	9500242	9500242 U	Numbering system for utility model applications. The first two digits indicate the last two numbers of the year of filing of the application. Used until the end of 1997.

TABLE I COUNTRIES OR ORGANIZATIONS HAVING ANNUAL SERIES OF APPLICATION NUMBERS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
DK (cont'd)	PA 1998 01234 BA 1998 00123	PA 1998 01234 BA 1998 00123	1998 01234 1998 00123 U	New numbering system as from 1998 where the letters PA indicate a patent application and BA a utility model application. The numerals in the third to sixth positions represent the year of filing of the application and the last five numerals represent a serial number assigned to the application. The letter codes PA and BA will not appear on the first pages of the published documents.
EC (ECUADOR)	SP 94-1046 SMU.94-033	94-1046 SMU.94-033	94-1046 or 94/1046 94-033 U	The first two digits indicate the last two numbers of the year of filing of the patent or utility model application.

TABLE I COUNTRIES OR ORGANIZATIONS HAVING ANNUAL SERIES OF APPLICATION NUMBERS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
EE (ESTONIA)	U 94 00001	9400001	9400001 U	Numbering system introduced in 1994. The first two digits of the number indicate the last two digits of the year of filing of the application. Digits in positions 3 to 7 denote the serial number of the application given by the receiving office. U = letter code characterizing a utility model application.
EG (EGYPT)	541/88 (old numbering system)	541/88	541/88	Numbering system used for patent applications. The two digits after the slash represent the last two digits of the year of filing of the application.
	1996010001 (new numbering system)	1996010001	1996010001	In the new numbering system, the year and month of filing of the application are indicated in positions 1 to 6 (e.g., January 1996 in the sample). Digits in positions 7 to 10 denote the serial number of the application.

TABLE I COUNTRIES OR ORGANIZATIONS HAVING ANNUAL SERIES OF APPLICATION NUMBERS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
EP (EUROPEAN PATENT OFFICE)	79100953.3	79100953	79100953	The first two digits indicate the last two numbers of the year of filing of the application. The third and fourth digits denote the place of filing. Digits in positions 5 to 8 denote the serial number of the application given by the receiving office. The digit in the last position is an error check digit.
ES (SPAIN)	P 8802029 (0)	8802029	8802029	New application numbering systems for patents and utility models were introduced in 1986.
	U 8900627 (5)	8900627	8900627 U	The letters P and U denote the type of industrial property right: P = patent for invention, U = utility model. The first two digits indicate the last two numbers of the year of filing of the application. The digit in brackets is used for computer control.
FI (FINLAND)	3032/73 (old numbering system)	3032/73	3032/73	-
	834567 (new numbering system)	834567	834567	New numbering system introduced on January 1, 1975. The first two digits indicate the last two numbers of the year of filing of the application.

TABLE I COUNTRIES OR ORGANIZATIONS HAVING ANNUAL SERIES OF APPLICATION NUMBERS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
	U951234 (new numbering system)	951234	951234 U	Utility models: the first two digits indicate the last two numbers of the year of filing of the application.

TABLE I COUNTRIES OR ORGANIZATIONS HAVING ANNUAL SERIES OF APPLICATION NUMBERS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
FR (FRANCE)	73.19342	73.19342	73.19342	Old style of presentation. Numbering system introduced for patent applications filed as from January 1969.
	96 11800	96 11800	96 11800	Deletion of the intermediary full stop from this number onwards. The number is formed of the last two figures of the year followed by a five-figure serial number (annual series). This number is the "national registration number" allocated on filing of an application which then also constitutes the number of the granted patent. Note: in the databases, the space after the year digits is deleted.
GB (UNITED KINGDOM)	41352/70 (old numbering system)	41352/70	41352/70	Numbering system according to the old 1949 Patents Act.
	8015674 (new numbering system)	8015674	8015674	New numbering system introduced according to the new 1977 Patents Act. The first two digits of the number represent the last two digits of the year of filing of the application.
GR (GREECE)	960100177 960200188	960100177 960200188	960100177 960200188 U	Numbering system introduced on January 1, 1988. The first two digits of the number represent the last two digits of the year of filing of the application.

TABLE I COUNTRIES OR ORGANIZATIONS HAVING ANNUAL SERIES OF APPLICATION NUMBERS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
				In positions three and four, the type of industrial property right is coded: 01 = patent application, 02 = utility model application. The last five digits represent the serial number of the application. From 1985 to 1987, a different annual numbering system was used (two digits to denote the year of filing and four digits for the serial number).
HU (HUNGARY)	39 55/81 (old numbering system)	39 55/81	39 55/81	Numbering system introduced in 1980. The last two digits indicate the last two numbers of the year of filing of the application.
	P 9300684 (new numbering system)	P 9300684	9300684	New numbering system introduced in 1992. P = letter code characterizing a patent application as well as an application for a plant patent.
	U 9300266 (new numbering system)	U 9300266	9300266 U	U = letter code characterizing a utility model application. The first two digits indicate the last two numbers of the year of filing of the application.

TABLE I COUNTRIES OR ORGANIZATIONS HAVING ANNUAL SERIES OF APPLICATION NUMBERS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
IE (IRELAND)	1152/69 (old numbering system)	1152/69	1152/69	Numbering system used until the end of 1991.
	920002 (new numbering system)	920002	920002	Numbering system as from January 1, 1992. The first two digits of the number represent the last two digits of the year of filing of the application and the rest constitute a rising annual series with leading zeros.
	S922656 (new numbering system for short-term Patent Applications)	S922656	S922656	In the above annual series, as from August 1, 1992, i.e., the date of commencement of the 1992 Patents Act, short-term Patent Applications are distinguished from the rest by prefixing their numbers with the letter "S."
IN (INDIA)	643/58	643/58	643/58	-

TABLE I COUNTRIES OR ORGANIZATIONS HAVING ANNUAL SERIES OF APPLICATION NUMBERS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
IT (ITALY) Until December 31, 1990	19001 A/73	19001 A/73	19001/73	A = letter code characterizing a patent application.
	20401 B/73	20401 B/73	20401/73 U	B = letter code characterizing a utility model application. Patent applications and utility model applications were numbered in parallel series. The letter is essential for identifying the applications. Each year a block of application numbers was allotted to each of the 93 provincial bureaus (UPICA) where patent applications can be filed. In 1973, 90,000 numbers were distributed for patent applications whereas a total of 30,000 applications was expected to be filed, and 70,000 numbers were distributed for utility model applications. As a result the number series contain about 100 gaps.
From January 1,1991	MI91A000231 MI94U000225	MI91A0231 MI94U0225	MI91A0231 MI940225 U	MI = two-letter code of the Provincial Office for Industry, Commerce and Handicraft *(Ufficio Provinciale Industria, Commercio e Artigianato—UPICA*) where the application was filed (e.g., MI stands for Milan). 91 and 94 = last two digits of the year of filing of the application.

TABLE I COUNTRIES OR ORGANIZATIONS HAVING ANNUAL SERIES OF APPLICATION NUMBERS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
IT From January 1,1991 (cont'd)				A = letter code characterizing a patent application and U a utility model application. (C = trademark application, O = ornamental model or multiple filing.) 000231 and 000225 = current numbers. Each UPICA starts its own annual numbering series for each kind of application every year with number 1; there are about 100 numbering series for patent applications, and both the application code and the UPICA code are essential for correct identification.

TABLE I COUNTRIES OR ORGANIZATIONS HAVING ANNUAL SERIES OF APPLICATION NUMBERS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
JP (JAPAN)	特願昭46-69807	46-69807	46-69807 or 46/69807	The first two symbols characterize a patent application. The third symbol relates to the Emperor's reign. The first two digits (before the dash) indicate the year of the Emperor's reign in which the application was filed. Number 46 refers to the SHOWA era and indicates the year 1971.
	特願平 3-180893	3-180893	3-180893 or 3/180893	The second example shows a patent application filed under the HEISEI era, which started in 1989, and indicates, with the figure 3, the filing year 1991.
	実願平 5-55143	5-55143	5-55143 U or 5/55143 U	The first two symbols characterize a utility model application. The third symbol relates to the Emperor's reign. The first digit (before the dash) indicates the year of the Emperor's reign in which the application was filed. Digit 5 refers to the HEISEI era and indicates the year 1993.

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TABLE I COUNTRIES OR ORGANIZATIONS HAVING ANNUAL SERIES OF APPLICATION NUMBERS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
KE (KENYA)	KE/P/92/00065	92/00065	92/00065	Application numbers for patents and utility models consist of the country code, a slash, letter P indicating that it is an application
	KE/UM/93/00001	93/00001	93/00001	for a patent (or letters UM indicating that it is an application for a utility model certificate), a slash, a two-digit indication of the year in which the application was first filed in Kenya, a slash and a five-digit number allotted in sequential order.
KG (KYRGYZ-STAN)	950012.1 950009.2	950012.1 950009.2	950012 950009 U	The first two figures indicate the last two numbers of the year of filing of the application. The following 4-digit number indicates the serial number of the application. The figure after the dot indicates the type of industrial property right (1 = patent for invention, 2 = utility model).
KR (REPUBLIC OF KOREA)	95-012345	95-012345	95-012345 or 95/012345	The first two symbols characterize a patent application. The first two digits before the dash indicate the year of filing of the application.
	95-701234	95-701234	95-701234 or 95/701234	A serial number greater than 700000 indicates a PCT application.

TABLE I COUNTRIES OR ORGANIZATIONS HAVING ANNUAL SERIES OF APPLICATION NUMBERS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
	실용 95-012345	95-012345	95-012345 U or 95/012345 U	The first two symbols characterize a utility model application. The first two digits before the dash indicate the year of filing of the application.
	실용 95-701234	95-701234	95-701234 U or 95/701234 U	A serial number greater than 700000 indicates a PCT application.
KZ (KAZAKH-STAN)	951117.1 95025.2	951117.1 95025.2	951117 95025 U	The first two digits designate the last two numbers of the year of filing of the application. The group of digits following the year of filing of the application and comprising three or four digits represents the sequential number of the application for a utility model or an invention. The digit after the full stop is a control digit which indicates the type of industrial property right: 1 = patent for invention, 2 = utility model.
LT (LITHUANIA)	95-014	95-014	95-014	Numbering system introduced on January 1, 1995. The first two digits (before the dash) indicate the last two numbers of the year of filing of the patent application.

TABLE I COUNTRIES OR ORGANIZATIONS HAVING ANNUAL SERIES OF APPLICATION NUMBERS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
MD (REPUBLIC OF MOLDOVA)	94-0287	94-0287	94-0287	The first two digits (before the dash) indicate the year of filing of the patent application. The four digits following the dash denote the serial number of the application.
MK (THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA)	Π 104/93	Π 104/93	104/93	The letter code preceding the number denotes the type of industrial property right (Π = patent for invention, as well as plant patent). The figure before the slash represents the serial number. The last two digits indicate the year of filing of the application.
MX (MEXICO)	9504146 (present numbering system)	9504146	9504146	The first two digits denote the last two numbers of the year of filing of the application and the last five the serial number of the application.
NL (NETHER-LANDS)	7015038 (old numbering system)	7015038	7015038	The first two digits indicate the last two numbers of the year of filing of the application. New numbering system introduced on April 1, 1995 (see Table II).
NO (NORWAY)	1748/70 (old numbering system)	1748/70	1748/70	The last two digits indicate the last two numbers of the year of filing of the application.

TABLE I COUNTRIES OR ORGANIZATIONS HAVING ANNUAL SERIES OF APPLICATION NUMBERS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
	740001 (new numbering system)	740001	740001	New numbering system introduced on January 1, 1974. The first two digits indicate the last two numbers of the year of filing of the application.
PK (PAKISTAN)	10131/65	1031/65	1031/65	-
RO (ROMANIA)	92-0884	92-0884	92-0884	Numbering system introduced on January 21, 1992. The first two digits represent the last two digits of the year of filing of the application. The digits after the dash constitute a rising serial number with leading zeros.

TABLE I COUNTRIES OR ORGANIZATIONS HAVING ANNUAL SERIES OF APPLICATION NUMBERS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
RU (RUSSIAN FEDERATION)	92005240 (old numbering system)	92005240	92005240	Numbering system used from 1992 to 1995. The first two digits of the number indicate the last two numbers of the year of filing of the application.
	95103445 (new numbering system)	95103445	95103445	Numbering system introduced from 1995. The first two digits indicate the last two numbers of the year of filing of the application. The third digit indicates the type of industrial property right: 1 – 4 = invention and utility model.
SE (SWEDEN)	16414/70 (old numbering system)	16414/70	16414/70	-
	7300001-0 (new numbering system)	7300001	7300001	New numbering system introduced as from January 1, 1973. However, some applications filed before 1973 have been renumbered according to the new numbering system, i.e., the number 16414/70 has become 7016414-8. The first two digits indicate the last two numbers of the year of filing of the application. The digit after the dash is used for computer control.

TABLE I COUNTRIES OR ORGANIZATIONS HAVING ANNUAL SERIES OF APPLICATION NUMBERS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
SI (SLOVENIA)	9300393	9300393	9300393	The first two digits indicate the last two numbers of the year of filing of the application. The third digit denotes the type of industrial property right and place of filing: 0 – 4 = patents and short-term patents. The last four digits denote the serial number of the application.
SK (SLOVAKIA)	PV 1234-95	1234-95	1234-95	PV is an abbreviation meaning “application for protection of an invention.” The last two digits indicate the last two numbers of the year of filing of the application.
	PÚV 123-95	123-95	123-95 U	PÚV is an abbreviation meaning “application for protection of a utility model.” The last two digits indicate the last two numbers of the year of filing of the application.

TABLE I COUNTRIES OR ORGANIZATIONS HAVING ANNUAL SERIES OF APPLICATION NUMBERS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
TJ (TAJIKISTAN)	96000375	96000375	96000375	Patent application.
	9600001	9600001	9600001 U	Utility model application. The first two digits indicate the last two numbers of the year of filing of the application. Digits in positions 3 to 8 denote the serial number of the application. The numbering system was introduced in 1993.
TM (TURK-MENISTAN)	07/100895N	07/100895	07/100895	New numbering system introduced as from January 1, 1997. The figure before the slash indicates the year of filing of the application (07 means 1997). The numeral after the slash denotes the type of industrial property right (1 = patent for invention). The last three numerals represent the serial number of the application. The digits in positions two and three, after the slash, are not yet used by the TM Office. The letter N is used to denote applications filed by non-residents.
TT (TRINIDAD AND TOBAGO)	164 of 1971 (old numbering system)	164 of 1971	164/1971 or 164/71	Numbering system for patent applications prior to 1996.

TABLE I COUNTRIES OR ORGANIZATIONS HAVING ANNUAL SERIES OF APPLICATION NUMBERS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
	960010	960010	960010	Numbering system for patent applications introduced from 1996.
UA (UKRAINE)	94051272	94051272	94051272	The first two digits of the number indicate the last two numbers of the year, and the subsequent two digits the month, of filing of the application.
UZ (UZBEKI-STAN)	IHAP9200019.1	IH9200019	9200019	Patent application.
	IHDP9200014.1	IH9200014	9200014	Application for a preliminary patent.
	FMGU9500009.1	FM9500009	9500009 U	Utility model application.
				The first two letters indicate the type of industrial property right followed by two letters denoting the type of protection document (IH = patent for invention, FM = utility model, AP = patent, DP = preliminary patent, GU = utility model certificate).
				The first two digits denote the last two numbers of the year of filing of the application.

TABLE I COUNTRIES OR ORGANIZATIONS HAVING ANNUAL SERIES OF APPLICATION NUMBERS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
UZ (UZBEKI-STAN (cont'd)				The five digits following the year indicator represent the serial number. The digit after the full stop indicates the examination division.
VE (VENEZUELA)	12122-68	12122-68	12122-68 or 12122/68	-
WO (WORLD INTEL-LECTUAL PROPERTY ORGANI-ZATION)	PCT/DE79/00016 PCT/IB94/00041	PCT/DE79/00016 PCT/IB94/00041	PCT/DE79/00016 PCT/IB94/00041	The same form should be used, if the PCT application number is cited under INID codes (86) and (30).
YU (YUGO-SLAVIA)	P1135/66	1135/66	1135/66	-
ZA (SOUTH AFRICA)	70/4865	70/4865	70/4865	-

TABLE I COUNTRIES OR ORGANIZATIONS HAVING ANNUAL SERIES OF APPLICATION NUMBERS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
ZM (ZAMBIA)	142/70	142/70	142/70	-
ZW (ZIMBABWE)	10/84	10/84	10/84	-

[Table II follows]

TABLE II COUNTRIES OR ORGANIZATIONS HAVING OTHER THAN ANNUAL NUMBERING SYSTEMS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
AR (ARGENTINA)	231790	231790	231790	-
AU (AUSTRALIA)	59195/69	59195/69	59195/69	Long series spread over several years. Provisional applications lodged after January 1,1970, were numbered PA0001 to PA9999, PB0001 to PB9999, etc.

TABLE II COUNTRIES OR ORGANIZATIONS HAVING OTHER THAN ANNUAL NUMBERING SYSTEMS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
BE (BELGIUM)	96469 (old numbering system, up to December 31, 1986)	96469	96469	Application numbers not present in published patent documents nor in official gazettes. Basis of numbering system: 10 parallel series of numbers (nine provincial bureaus plus filing by post) which are not otherwise specified. Starting date of provincial series is 1854, of "Filing by post" series 1965. Numbering system used from 1974 to 1986, according to which each of the 10 parallel series of numbers is identified by a numeral (0 to 9) appearing in a patent application number as the first digit and allowing unique identification of the application.
BG (BULGARIA)	100116	100116	100116	Common continuous numbering system for applications for patents for inventions and for utility models (as from June 1, 1993).
	183	183	183	Common continuous numbering system for applications for plant varieties and animal breeds (as from January 4, 1997).

TABLE II COUNTRIES OR ORGANIZATIONS HAVING OTHER THAN ANNUAL NUMBERING SYSTEMS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
BR (BRAZIL)	222986 (old numbering system)	222986	222986	Numbering system prior to 1972. (See an example of new numbering system in Table I.)

TABLE II COUNTRIES OR ORGANIZATIONS HAVING OTHER THAN ANNUAL NUMBERING SYSTEMS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
CA (CANADA)	103828 (old numbering system)	103828	103828	Numbering system for patent applications filed prior to October 1, 1989. The old numbering system comprised two series of application numbers. The first series started in 1869 and the second on September 13, 1967. The starting number of the first series was 1 and the last number of the first series was 999,999. The starting number of the second series was 1. The second series of the old numbering system is still continuing.
	2103828 (current numbering system)	2103828	2103828	Numbering system for patent applications filed on or after October 1, 1989. The starting number of the current numbering system is 2000001.
CO (COLOMBIA)	126050	126050	126050	-
CU (CUBA)	33384 (old numbering system)	33384	33384	Until the year 1984, a continuous numbering system was used for patent applications. The numbers were assigned in ascending order to the applications filed. New numbering system as from 1985 (see Table I).

TABLE II COUNTRIES OR ORGANIZATIONS HAVING OTHER THAN ANNUAL NUMBERING SYSTEMS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
DE (GERMANY) (documents published by the former DD Office)	AP 84 C/137 355 WP 35 B/147 203 (old numbering system based on the national patent classification)	137 355 147 203	137 355 147 203	AP = *Ausschliessungspatent* WP = *Wirtschaftspatent* The other symbols before the slash are classification symbols.
	AP C 07 C/166 692 WP H 04 C/174 347 (old numbering system based on the IPC)	166 692 174 347	166 692 174 347	A single numbering series covers both AP and WP applications. The symbols before the slash may be changed due to the examination process.

TABLE II COUNTRIES OR ORGANIZATIONS HAVING OTHER THAN ANNUAL NUMBERING SYSTEMS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
DE (documents published by the former DD Office) (cont'd)	AP C07D / 2273 773 WP E21C/ 2269 623 (new numbering system as of 1981)	2273 773 2269 623	2273 773 2269 623	The last digit of the application number in the new numbering system denotes a check number for electronic data processing.
ES (**SPAIN**)	406.952 (old numbering system, up to 1986)	406.952	406.952	Patent application number (application filed in 1972).
	185.284 (old numbering system, up to 1986)	185.284	185.284 U	Utility model application number (application filed in 1972). Until 1986, patent and utility model applications were numbered in two parallel series. No specific indication for the type of industrial property right appears in the application number. Starting date of patent application numbering system: 1878. Last patent application number: 557.877. Starting date of utility model application numbering system: 1929. Last utility model application number: 420.817.

TABLE II COUNTRIES OR ORGANIZATIONS HAVING OTHER THAN ANNUAL NUMBERING SYSTEMS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
	New numbering system for applications from 1986: see Table I. New numbering system for published documents from 1986: continuous series from 2.000.000 onwards for patents and from 1.000.000 onwards for utility models.			

TABLE II COUNTRIES OR ORGANIZATIONS HAVING OTHER THAN ANNUAL NUMBERING SYSTEMS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
GE (GEORGIA)	000288	000288	000288	Patent application.
	000185	000185	000185	Utility model application.
GR (GREECE)	44114 (old numbering system)	44114	44114	Numbering system used until the end of 1984. New numbering system as of 1985: see Table I.
HU (HUNGARY)	OE 107 (old numbering system)	OE 107	OE 107	The letters preceding the number are the first letter and first following vowel of the applicant's name. There is a separate numbering series for each pair of letters. The letters are essential for identifying the application.
IL (ISRAEL)	53125	53125	53125	-
LT (LITHUANIA)	IP 2029 (old numbering system)	IP 2029	IP 2029	IP is an abbreviation meaning "application for protection of an invention."
	RP 346 (old numbering system)	RP 346	RP 346	RP is an abbreviation meaning "application for re-registration of a patent."
				Numbering system used from 1992 to 1995.
				New numbering system for applications (from 1995): see Table I.

TABLE II COUNTRIES OR ORGANIZATIONS HAVING OTHER THAN ANNUAL NUMBERING SYSTEMS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
LU (LUXEM-BOURG)	60093	60093	60093	–
MC (MONACO)	PV 908	908	908	The letters PV stand for *Procès-verbal*.
MD (REPUBLIC OF MOLDOVA)	0187	0187	0187 U	Utility model application.

TABLE II COUNTRIES OR ORGANIZATIONS HAVING OTHER THAN ANNUAL NUMBERING SYSTEMS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
MN (MONGOLIA)	955	955	955	Application for a patent for invention. No indication as to the type of industrial property right concerned.
MX (MEXICO)	123723 (old numbering system)	123723	123723	The six digits denote the serial number of the application. For new numbering system, please refer to Table I.
NL (NETHER-LANDS)	1000123	1000123	1000123	On April 1, 1995, in the Netherlands a new patent act came into force. The new numbering system for applications and patents consists of a continuous series beginning with 1000001.
NZ (NEW ZEALAND)	201732	201732	201732	-
OA (AFRICAN INTEL-LECTUAL	52118	52118	52118	Number assigned to the application filed according to direct filing procedure.
PROPERTY ORGANI-ZATION)	051/SN	051/SN	051/SN	Number assigned to the application filed according to indirect filing procedure. The two last letters denote the ST.3 code of the country of origin.

TABLE II COUNTRIES OR ORGANIZATIONS HAVING OTHER THAN ANNUAL NUMBERING SYSTEMS

Country or Organization	Example of Application Number	Minimum Significant Part of a Number	Recommended Presentation in Abbreviated Form as a Priority Application Number	Remarks
PH (PHILIPPINES)	40155	40155	40155	Patent application filed on March 7, 1990.
PL (POLAND)	P 214461	214461	214461	Patent application.
	W 36746	36746	36746 U	Utility model application.
PT (PORTUGAL)	52555	52555	52555	Patent application.
	5607	5607	5607 U	Utility model application.
RO (ROMANIA)	145006 (old numbering system)	145006	145006	Numbering system used until January 1992. For new numbering system, see Table I.
SU (SOVIET UNION) (former)	1397205/30-15	1397205	1397205	The numbers following the slash denote the examination division and a processing number. This numbering system was valid up to October 14, 1992.
TM (TURK-MENISTAN)	956 (old numbering system)	956	956	Numbering system used before 1997. For new numbering system, see Table I.
TT (TRINIDAD AND TOBAGO)	42 (old numbering system)	42	42	Numbering system for patent applications used prior to the year 1904.

A P P E N D I X C

Guidance on Foreign Addresses

1. Japanese Addresses

Ken (prefecture):
use **State or Province::**
only 1 entry per address

Gun (county): [likely to be omitted from an address if shi (city)]
Shi (city)
Cho (township)
Machi (village)
Mura (village),
Ku (borough)
(District), or Cho (as district only if shi comes before)
Chome (block)
may be with **Street::** and **City::** labels as appropriate to designate postal hierarchy
only one **City::** *per address*

Examples:

Family Name::	Totoki
Street::	c/o Kao Corp., Research Lab
	1-3, Bunka 2-chome
City::	Sumida-ku
State or Province::	Tokyo
Country:	Japan
Postal or Zip Code::	131-8501
Citizenship Country::	Japan

Family Name::	Yamada
Street::	Yaho Corp.
	Toyota-cho

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	1-3, Bunka 2-chome
City::	Toyota-shi
State or Province::	Aichi-sen
Country:	Japan
Postal or Zip Code::	131-8501
Citizenship Country::	Japan

Supplemental Application Data Sheet

Application Information

Application Number::	10/553,575
Filing Date::	September 26, 2006
Application Information	
Application Type::	Regular
Subject Matter::	Utility
Suggested Classification::	
Suggested Group Art Unit::	
CD-ROM or CD-R?::	None
Number of CD Disks::	
Number of Copies of CDs::	
Sequence Submission?::	
Computer Readable Form (CRF)?::	No
Number of copies of CRF::	
Title::	SYSTEMS TO ENHANCE DATA ENTRY IN MOBILE AND FIXED ENVIRONMENT
Attorney Docket Number::	GHASSABIAN12
Request for Early Publication?::	No
Request for Non-Publication?::	No
Suggested Drawing Figure::	
Total Drawing Sheets::	81
Small Entity?::	Yes
Latin Name::	
Variety Denomination Name::	
Petition Included::	No
Petition Type::	
Licensed US Govt. Agency::	
Contract or Grant Numbers::	
Secrecy Order in Parent Appl.?::	No
Applicant Information	
Applicant Authority Type::	Inventor

Samsung Exhibit 1006, Page 767 of 1063

Primary Citizenship Country::	Israel
Status::	Full Capacity
Given Name::	Firooz
Middle Name::	Benjamin
Family Name::	GHASSABIAN
Name Suffix::	
City of Residence::	Great Neck
State or Province of Residence::	New York
Country of Residence::	U.S.A.
Street of Mailing Address::	11 Locust Cove Lane
City of Mailing Address::	Great Neck
State or Province of Mailing Address::	New York
Country of Mailing Address::	U.S.A.
Postal or Zip Code of Mailing Address::	11024
Correspondence Information	
Correspondence Customer Number::	001444
Representative Information	
Representative Customer Number::	001444

Domestic Priority Information

Application::	Continuity Type::	Parent Application::	Parent Filing Date::
This Application	National Stage of	PCT/US04/12082	04-19-2004
PCT/US04/12082	Appln claiming benefit under 35 USC 119(e)	60/463,844	04-18-2003
PCT/US04/12082	Appln claiming benefit under 35 USC 119(e)	60/466,594	04/30/2003
PCT/US04/12082	Appln claiming benefit of 35 USC 119(e)	60/468,028	05/05/2003
PCT/US04/12082	Appln claiming benefit of 35 USC 119(e)	60/474,447	05/30/2003
PCT/US04/12082	Appln claiming benefit of 35 USC 119(e)	60/475,533	06/03/2003
PCT/US04/12082	Appln claiming benefit of 35 USC 119(e)	60/482,706	06/26/2003
PCT/US04/12082	Appln claiming benefit of 35 USC 119(e)	60/482,998	06/27/2003
PCT/US04/12082	Appln claiming benefit of 35 USC 119(e)	60/496,702	08/20/2003
PCT/US04/12082	Appln claiming benefit of 35 USC 119(e)	60/500,602	09/05/2003
PCT/US04/12082	Appln claiming benefit of 35 USC 119(e)	60/504,331	09/19/2003
PCT/US04/12082	Appln claiming benefit of 35 USC 119(e)	60/510,885	10/14/2003
PCT/US04/12082	Appln claiming benefit of 35 USC 119(e)	60/536,564	01/14/2004

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PCT/US04/12082	Appln claiming benefit of 35 USC 119(e)	60/552,968	03/11/2004
PCT/US04/12082	Appln claiming benefit of 35 USC 119(e)	60/557,140	03/26/2004
This Application	Continuation-in-Part of	10/483,528	01-19-2004
10/483,528	National Stage of	PCT/US02/22385	07-12-2002
PCT/US02/22385	Appln claiming benefit of 35 USC 119(e)	60/337,425	12-05-2001
PCT/US02/22385	Appln claiming benefit of 35 USC 119(e)	60/328,002	10-09-2001
PCT/US02/22385	Appln claiming benefit of 35 USC 119(e)	60/324,581	09-25-2001
PCT/US02/22385	Appln claiming benefit of 35 USC 119(e)	60/304,845	07-12-2001

Assignment Information

Assignee Name::

Street of Mailing Address::

City of Mailing Address::

State or Province of Mailing Address::

Country of Mailing Address::

Postal or Zip Code of Mailing Address::

Attorney Signature

Name: Roger L. Browdy Signature: /rlb/

Date: December 29, 2009 Reg. No.: 25,618

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Electronic Acknowledgement Receipt	
EFS ID:	6722464
Application Number:	10553575
International Application Number:	
Confirmation Number:	7464
Title of Invention:	Systems to enhance data entry in mobile and fixed environment
First Named Inventor/Applicant Name:	Benjamin Firooz Ghassabian
Customer Number:	01444
Filer:	Roger Lowen Browdy/Jason Williams
Filer Authorized By:	Roger Lowen Browdy
Attorney Docket Number:	GHASSABIAN12
Receipt Date:	29-DEC-2009
Filing Date:	26-SEP-2006
Time Stamp:	16:48:03
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Petition for review and processing by the PCT legal office.	2009-12-29Petition.pdf	1395398 357dc8083853d70385bac22e15e403bd8163eb82	no	73
Warnings:					
Information:					

2	Application Data Sheet	2009-12-29SupplADS.pdf	133434 0cca4d8cb3cc41f4987c280799e379947d8af4ee	no	3
Warnings:					
Information:					
This is not an USPTO supplied ADS fillable form					
			Total Files Size (in bytes):	1528832	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

ATTY.'S DOCKET: GHASSABIAN12

In re Application of:	)	Art Unit: 2629
	)	
Benjamin GHASSABIAN et al.	)	Examiner: Lam, Vinh Tang
	)	
Appln. No.: 10/553,575	)	Washington, D.C.
	)	
Date Filed: September 26, 2006	)	Confirmation No. 7464
	)	
For: SYSTEMS TO ENHANCE DATA ENTRY IN MOBILE AND FIXED ENVIRONMENT	)	February 18, 2010

AMENDMENT

Honorable Commissioner for Patents
U.S. Patent and Trademark Office
Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Sir:

Further to a notice of a non-compliant response, dated November 18, 2009, kindly amend the application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 8 of this paper.

Amendments to the Claims

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1-34. **(Cancelled)**

35. **(Currently Amended)** A data entry system, comprising:

an input unit adapted to receive ~~four~~ a plurality of different first input signals, each associated with a group of symbols and together associated with all the letters of an alphabet of a language; and

a word predictive system adapted to select a single word from a word database responsive to a sequence of first input signals provided by a user, while selecting for each of the first input signals in the sequence one of the letters out of the group of symbols with which it is associated,

wherein the input unit comprises a plurality of keys arranged in two groups, the keys of each group arranged in a respective single column, wherein each group is configured for use by a finger of a different hand of a user.

36. **(Currently Amended)** The system of claim 35, comprising:

an output unit for displaying the selected word to a user; and

a second input unit adapted to receive second input signals corresponding to the letters of the alphabet,

wherein the word predictive system is adapted to select a word for a sequence of first input signals using received second input signals received after displaying a selected word for the sequence of first input signals.

37. **(Previously presented)** The system of claim 36, wherein the second input unit is adapted to receive speech signals corresponding to the letters of the alphabet.

38. **(Previously presented)** The system of claim 37, comprising a recognition system which uses the speech signals corresponding to the letters of the alphabet in selecting for first input signals a single letter from the group of symbols associated with the first signal..

39. **(Previously presented)** The system of claim 35, wherein the input unit comprises a single pressure sensitive pad for receiving the first input signals, corresponding with the letters of the alphabet.

40. **(Currently Amended)** The system of claim 35, wherein the input device comprises four keys, each key being used to generate one of the first input signals, the four keys together associated with all the letters of the alphabet of the language.

41. **(Currently Amended)** The system of claim 40, wherein each of the first input signals is inputted by a single pressing on a respective one of the four keys.

42-43. **(Cancelled)**

44. **(Previously presented)** The system of claim 42, wherein the columns are distanced from each other by a distance substantially greater than the widths of the keys.

45. **(Previously presented)** The system of claim 42, wherein the columns are located on opposite sides of a screen of the system.

46. **(Previously presented)** The system of claim 40, wherein the keys comprise physical keys.

47. **(Previously presented)** The system of claim 40, wherein the keys comprise virtual keys.

48. **(Previously presented)** The system of claim 40, wherein different interactions with the keys correspond to different signals.

49. **(Previously presented)** The system of claim 48, wherein the keys respond to two different types of interactions, a first type of interaction corresponds to respective ones of the first signals and a second type of interaction corresponds to symbols other than those represented by the first signals.

50. **(Previously presented)** The system of claim 49, wherein the keys are associated with respective ones of the first signals when pressed slightly and with other symbols when pressed heavily.

51. **(Previously presented)** The system of claim 35, wherein each of the four input signals corresponds to at least six letters.

52. **(Previously presented)** The system of claim 51, wherein two of the input signals correspond to six letters.

53. **(Previously presented)** The system of claim 40, wherein the four keys are arranged, such that a user can touch all the four keys concurrently with two fingers, in a manner which allows selectively actuating each of the keys by one of the two fingers.

54. **(Previously presented)** The system of claim 53, wherein the two fingers comprise two thumbs.

55. **(Previously presented)** The system of claim 53, wherein the four keys are arranged such that a user can touch all the keys concurrently with a single finger, in a manner which allows selectively actuating each of the keys by the finger.

56-59. **(Cancelled)**

60. **(Currently Amended)** A data entry system of a device, comprising:

a plurality of keys including no more than six keys associated with all the letters of an alphabet of a language;

a screen; and

a processor adapted to display on the screen characters entered through the keys,

wherein the plurality of keys associated with all the letters of an alphabet of a language are arranged in two groups each on an opposite end of the device, the groups being separated at least partially by a section not containing keys, wherein each group is configured for use by a finger of a different hand of a user.

61. **(Previously presented)** The system of claim 60, wherein the plurality of keys are arranged in two groups each on an opposite end of the screen.

62. **(Previously presented)** The system of claim 60, wherein the plurality of keys are organized in two columns, one on one end of the device and a second one on an opposite end of the device.

63. **(Previously presented)** The system of claim 60, comprising a pointing device on a side of the device opposite the screen.

64. **(Previously presented)** The system of claim 60, wherein at least two of the no more than six keys are located on a right side of the screen and at least two of the no more than six keys are on a left side of the screen.

65. **(Previously presented)** The system of claim 64, wherein the screen has a larger horizontal axis than vertical axis in its letter display orientation.

66. **(Previously presented)** The system of claim 60, wherein the plurality of keys comprise four keys associated with all the letters of the alphabet.

67. **(Previously presented)** The system of claim 60, wherein the plurality of keys associated with all the letters of the alphabet arranged such that a user can touch all the keys concurrently with two fingers, in a manner which allows selectively actuating each of the keys by one of the two fingers.

68. **(Previously presented)** The system of claim 60, wherein the plurality of keys are arranged in two groups of equal numbers of keys.

69. **(Previously presented)** The system of claim 60, wherein the keys comprise physical keys.

70. **(Previously presented)** The system of claim 60, wherein the keys comprise virtual keys.

71. **(Previously presented)** The system of claim 60, wherein each group includes at least one additional key not associated with letters.

72. **(Previously presented)** The system of claim 60, wherein each group includes exactly four keys on its end of the device.

73. **(Previously presented)** The system of claim 60, wherein each group includes exactly three keys on its end of the device.

74. **(New)** The system of claim 36, wherein the word predictive system is adapted to provide a first word for a sequence of first input signals and to provide a second word different from the first word, for the same sequence of first input signals, responsive to receiving a second input signal.

75. **(New)** The system of claim 36, wherein the second signals which the second input unit is adapted to receive are not affected by the specific first input signals received.

76. **(New)** The system of claim 36, wherein the word predictive system is adapted to select a word for a sequence of first input signals using second input signals received after a cursor is moved from the place it was located immediately after a corresponding first signal was entered.

77. **(New)** The system of claim 35, wherein the plurality of different first input signals comprise four first input signals associated with all the letters of the alphabet.

78. **(New)** The system of claim 35, wherein both groups include the same number of keys.

79. **(New)** The system of claim 35, wherein the groups are located on opposite ends of the device.

80. **(New)** The system of claim 35, wherein the input signals together associated with all the letters of the alphabet are generated by interactions of the fingers with up to six of the keys.

REMARKS

The present application includes claims 35-41, 44-55 and 60-77. Claims 43 and 56-59 were cancelled and claims 74-77 were added. Claims 35, 36, 40, 41 and 60 were amended. New claim 74 finds support at least on page 39, lines 2-5 of the application. New claim 75 finds support at least on page 40 and mew claim 76 finds support at least on page 38, lines 14-19. New claim 77 includes subject matter removed from claim 35. New claim 78 finds support at least in Figs. 47A, 47B, 47E, 49, 53 and 69B. New claim 79 finds support at least on page 162, line 10. New claim 80 finds support at least on page 155, line 18, page 156, lines 5-6 and page 160, line 2.

Restriction

The Examiner stated that the newly submitted claims are directed at an invention that is independent or distinct from the invention originally claimed.

In response, independent claims 35 and 60 were amended to include the limitation stated by the Examiner as qualifying the already examined claims. Claims 56-59 were cancelled. Applicant reserves the right to file thee claims in a subsequent divisional application.

102 and 103 rejections

Claims 24-27 and 30-32 were rejected under 35 USC 102(b) as being anticipated by Vale (US patent 6,359,572).

Claims 29 and 33-34 were rejected under 35 USC 103(a) as being unpatentable over Vale (US patent 6,359,572).

Claim 28 was rejected under 35 USC 103(a) as being unpatentable over Vale (US patent 6,359,572) in view of Pratley et al. (US patent 6,356,866).

Independent claims 35 and 60

Claim 35 requires "wherein the input unit comprises a plurality of keys arranged in two groups, the keys of each group arranged in a respective single column". As clearly seen in the figures of Vale, the keys of each group, configured for use with a different hand of the user, are not arranged in a single column.

Claim 60 requires "wherein the plurality of keys associated with all the letters of an alphabet of a language are arranged in two groups each on an opposite end of the device, the groups being separated at least partially by a section not containing keys".

This is not taught or suggested by Vale. As shown in Vale, the keys carrying letters are positioned next to each other. It is further noted that even if separation of keys can be demonstrated in the art for a specific system, this does not imply that it would be obvious to separate the letter keys in a system having a word predictive system, as required by claim 35 or in a system of a limited number of keys as required by claim 60.

Dependent claims

The dependent claims are allowable at least by the virtue of their parent claims. Nonetheless, at least some of the dependent claims add further patentability over claim 35.

Claim 44, for example, requires that the columns are distanced from each other by a distance substantially greater than the widths of the keys. Claim 45 requires that the columns are located on opposite sides of a screen of the system. Neither of these possibilities is taught or suggested by the art. As shown in Vale, the keys carrying letters are positioned next to each other.

Claim 77, for example, requires four first input signals associated with all the letters of the alphabet. As discussed in length in applicant's response from July 2009, this is not taught or suggested by the art.

Conclusion

Applicants respectfully submit that in view of the above amendments and arguments the claims are allowable. Allowance of the application is respectfully awaited.

If, however, the Examiner does not see fit to allow the claims, Applicants respectfully request, following the provisions of MPEP 713.01, that the Examiner notify Applicant's representative after he has considered the effect of Applicant's current response so that a telephone interview between the Examiner and Applicant's representative can be arranged before a further action is issued. Applicant is of the opinion that such a telephone interview can expedite the case to final action. The undersigned can be reached at 202-628-5197.

Respectfully submitted,

BROWDY AND NEIMARK, P.L.L.C.
Attorneys for Applicant(s)

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G:\BN\B\bend\ghassabian12\pto\2010-02-18Amendment.doc

Electronic Patent Application Fee Transmittal	
Application Number:	10553575
Filing Date:	26-Sep-2006
Title of Invention:	Systems to enhance data entry in mobile and fixed environment
First Named Inventor/Applicant Name:	Benjamin Firooz Ghassabian
Filer:	Roger Lowen Browdy/Sharnita Davenport
Attorney Docket Number:	GHASSABIAN12
Filed as Small Entity	

U.S. National Stage under 35 USC 371 Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Claims in excess of 20	2615	1	26	26
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 2 months with $0 paid	2252	1	245	245
Miscellaneous:				
		Total in USD ($)		**271**

Electronic Acknowledgement Receipt	
EFS ID:	7040165
Application Number:	10553575
International Application Number:	
Confirmation Number:	7464
Title of Invention:	Systems to enhance data entry in mobile and fixed environment
First Named Inventor/Applicant Name:	Benjamin Firooz Ghassabian
Customer Number:	01444
Filer:	Roger Lowen Browdy/Sharnita Davenport
Filer Authorized By:	Roger Lowen Browdy
Attorney Docket Number:	GHASSABIAN12
Receipt Date:	18-FEB-2010
Filing Date:	26-SEP-2006
Time Stamp:	16:25:59
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$271
RAM confirmation Number	2933
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Extension of Time	2010-02-18-GenTransm_ExtTime.pdf	15567 67c92167ec63e146c2c5fa5e52a815f6ff074652	no	1
Warnings:					
Information:					
2		2010-02-18Amendment.pdf	47118 5a8284b51e8058611897d4a3f8747c3df81b3832	yes	10
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Supplemental Response or Supplemental Amendment		1	1	
	Claims		2	7	
	Applicant Arguments/Remarks Made in an Amendment		8	10	
Warnings:					
Information:					
3	Fee Worksheet (PTO-875)	fee-info.pdf	31882 67ee05de23d3fce981c72720b76432227fa6e5f7	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	94567		

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New Applications Under 35 U.S.C. 111
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New International Application Filed with the USPTO as a Receiving Office
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of: Benjamin Firooz GHASSABIAN et al.

Art Unit: 2629

Application No.: 10/553,575 Confirmation No.: 7464

Examiner: V. T. LAM

Filing Date: September 26, 2006

Washington, D.C.

For: SYSTEMS TO ENHANCE DATA ENTRY IN MOBILE AND FIXED ENVIRONMENT

Atty.'s Docket: GHASSABIAN 12

Date: February 18, 2010

U.S. Patent and Trademark Office
Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Sir:

Transmitted herewith is a [XX] Amendment [ ] _____ in the above-identified application.

[XX] Small Entity Status: Applicant(s) claim small entity status. See 37 C.F.R. §1.27.

[ ] No additional fee is required.

[XX] The fee has been calculated as shown below:

	(Col. 1)		(Col. 2)	(Col. 3)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NO. PREVIOUSLY PAID FOR	PRESENT EXTRA EQUALS	RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
TOTAL	* 40	MINUS	** 40	1	x 26	$ 26.00		x 52	$
INDEP.	* 2	MINUS	*** 5	0	x 110	$		x 220	$
FIRST PRESENTATION OF MULTIPLE DEP. CLAIM					+ 195	$		+ 390	$
					ADDITIONAL FEE TOTAL	$ 26.00	OR	TOTAL	$

* If the entry in Col. 1 is less than the entry in Col. 2, write "0" in Col. 3.

** If the "Highest Number Previously Paid for" IN THIS SPACE is less than 20, write "20" in this space.

*** If the "Highest Number Previously Paid for" IN THIS SPACE is less than 3, write "3" in this space.

The "Highest Number Previously Paid For" (total or independent) is the highest number found from the equivalent box in Col. 1 of a prior amendment of the number of claims originally filed.

[XX] Conditional Petition for Extension of Time

If any extension of time for a response is required, applicant requests that this be considered a petition therefor.

[XX] It is hereby petitioned for an extension of time in accordance with 37 CFR 1.136(a). The appropriate fee required by 37 CFR 1.17 is calculated as shown below:

Small Entity Response Filed Within			Other Than Small Entity Response Filed Within		
[ ]	First -	$ 65.00	[ ]	First -	$ 130.00
[XX]	Second -	$ 245.00	[ ]	Second -	$ 490.00
[ ]	Third -	$ 555.00	[ ]	Third -	$ 1110.00
[ ]	Fourth -	$865.00	[ ]	Fourth -	$ 1730.00
[ ]	Fifth	$1175.00	[ ]	Fifth -	$ 2350.00
Month After Time Period Set			Month After Time Period Set		

[ ] Less fees ($_____) already paid for ___ month(s) extension of time on _____.

[ ] Please charge my Deposit Account No. 02-4035 in the amount of $_____.

[XX] Credit Card Payment **online**, authorizing payment in the amount of $271.00

[ ] A check in the amount of $_____ is attached (check no.).

[XX] The Commissioner is hereby authorized and requested to charge any additional fees which may be required in connection with this application or credit any overpayment to Deposit Account No. 02-4035. This authorization and request is not limited to payment of all fees associated with this communication, including any Extension of Time fee, not covered by check or specific authorization, but is also intended to include all fees for the presentation of extra claims under 37 CFR §1.16 and all patent processing fees under 37 CFR §1.17 throughout the prosecution of the case. This blanket authorization does not include patent issue fees under 37 CFR §1.18.

BROWDY AND NEIMARK, P.L.L.C.

Attorneys for Applicant(s)

Facsimile: (202) 737-3528
Telephone: (202) 628-5197

By: /Ronni S. Jillions/
Ronni S. Jillions
Registration No. 31,979

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
10/553,575	09/26/2006	

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)	SMALL ENTITY ☒ RATE ($)	SMALL ENTITY ☒ FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY FEE ($)
FOR	NUMBER FILED	NUMBER EXTRA					
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	02/18/2010	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 40	Minus	** 40	= 0	X $26 =	0	OR	X $ =	
	Independent (37 CFR 1.16(h))	* 2	Minus	***5	= 0	X $110 =	0	OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE	0	OR	TOTAL ADD'L FEE	

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)	OR	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/LAWANDA MILTON/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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UNITED STATES DEPARTMENT OF COMMERCE
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Alexandria, Virginia 22313-1450
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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
10/553,575	09/26/2006	2629	1698	GHASSABIAN12	1	1

CONFIRMATION NO. 7464

CORRECTED FILING RECEIPT

1444
BROWDY AND NEIMARK, P.L.L.C.
624 NINTH STREET, NW
SUITE 300
WASHINGTON, DC 20001-5303

OC000000040646520

Date Mailed: 03/31/2010

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)

Benjamin Firooz Ghassabian, Great Neck, NY;

Power of Attorney: The patent practitioners associated with Customer Number 01444

Domestic Priority data as claimed by applicant

This application is a 371 of PCT/US04/12082 04/19/2004
which claims benefit of 60/463,844 04/18/2003
and claims benefit of 60/466,594 04/30/2003
and claims benefit of 60/468,028 05/05/2003
and claims benefit of 60/474,447 05/30/2003
and claims benefit of 60/475,533 06/03/2003
and claims benefit of 60/482,706 06/26/2003
and claims benefit of 60/482,998 06/27/2003
and claims benefit of 60/500,602 09/05/2003
and claims benefit of 60/504,331 09/19/2003
and claims benefit of 60/510,885 10/14/2003
and claims benefit of 60/536,564 01/14/2004
and claims benefit of 60/552,968 03/11/2004
and claims benefit of 60/557,140 03/26/2004
and claims benefit of 60/496,702 08/20/2003
This application 10/553,575
is a CIP of 10/483,528 01/09/2004 ABN
which is a 371 of PCT/US02/22385 07/12/2002
which claims benefit of 60/337,425 12/05/2001
and claims benefit of 60/328,002 10/09/2001
and claims benefit of 60/304,845 07/12/2001

and claims benefit of 60/324,581 09/25/2001

Foreign Applications

If Required, Foreign Filing License Granted: 03/24/2007

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 10/553,575**

Projected Publication Date: Not Applicable

Non-Publication Request: No

Early Publication Request: No
**** SMALL ENTITY ****
Title

Systems to enhance data entry in mobile and fixed environment

Preliminary Class

345

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

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LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

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In re Application of :
GHASSABIAN et al. :
Application No.: 10/553,575 :
Filed: September 26, 2006 : DECISION ON PETITION
Attorney Docket No.: GHASSABIAN12 :
For: SYSTEMS TO ENHANCE DATA ENTRY :
IN MOBILE AND FIXED :
ENVIRONMENT

This is a decision on the renewed petition under 37 CFR 1.78(a)(3), filed December 29, 2009, to accept an unintentionally delayed claim under 35 U.S.C. §120 for the benefit of priority to the prior-filed nonprovisional applications set forth in the Application Data Sheet (ADS) filed concurrently with the instant petition.

The petition is **GRANTED**.

The present nonprovisional application was filed after November 29, 2000, and the claim herein for the benefit of priority to the prior-filed application is submitted after expiration of the period specified in 37 CFR 1.78(a)(2)(ii). Therefore, this is a proper petition under 37 CFR 1.78(a)(3).

A petition for acceptance of a claim for late priority under 37 CFR 1.78(a)(3) is only applicable to those applications filed on or after November 29, 2000. Further, the petition is appropriate only after the expiration of the period specified in 37 CFR 1.78(a)(2)(ii). In addition, the petition under 37 CFR 1.78(a)(3) must be accompanied by:

(1) the reference required by 35 U.S.C. § 120 and 37 CFR 1.78(a)(2)(i) of the prior-filed application, unless previously submitted;
(2) the surcharge set forth in § 1.17(t); and
(3) a statement that the entire delay between the date the claim was due under 37 CFR 1.78(a)(2)(ii) and the date the claim was filed was unintentional. The Director may require additional information where there is a question whether the delay was unintentional.

The petition complies with the requirements for a grantable petition under 37 CFR 1.78(a)(3) in that (1) a reference to the prior-filed nonprovisional applications has been included in an application data sheet, as provided by 37 CFR 1.78(a)(2)(iii); (2) the surcharge fee required by 37 CFR 1.17(t) has been submitted; and (3) the petition contains a proper statement of unintentional delay. Accordingly, having found that the instant petition for acceptance of an unintentionally delayed claim for the benefit of priority under 35 U.S.C. § 120 to the prior-filed nonprovisional application satisfies the conditions of 37 CFR 1.78(a)(3), the petition is granted.

The granting of the petition to accept the delayed benefit claim to the prior-filed application under 37 CFR 1.78(a)(3) should not be construed as meaning that this application is entitled to the benefit of the prior-filed applications. In order for this application to be entitled to the benefit of the prior-filed applications, all other requirements under 35 U.S.C. § 120 and 37 CFR 1.78(a)(1) and (a)(2) must be met. Similarly, the fact that the corrected Filing Receipt accompanying this decision on petition includes the prior-filed applications should not be construed as meaning that applicant is entitled to the claim for benefit of priority to the prior-filed applications noted thereon.

A corrected Filing Receipt, which includes the priority claim to the prior-filed nonprovisional and international applications, accompanies this decision on petition.

Any inquiries concerning this decision may be directed to Anthony Smith, Attorney Advisor, at (571) 272-3298. All other inquiries concerning either the examination procedures or status of the application should be directed to the Technology Center.

This matter is being referred to Technology Center Art Unit 2629 for consideration by the examiner of applicant's entitlement to claim benefit of priority to the prior-filed applications.

BryanLin

Bryan Lin
Legal Examiner
PCT Legal Administration

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,575	09/26/2006	Benjamin Firooz Ghassabian	GHASSABIAN12	7464

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ART UNIT	PAPER NUMBER
2629	

MAIL DATE	DELIVERY MODE
04/29/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/553,575	GHASSABIAN, BENJAMIN FIROOZ	
	Examiner	Art Unit	
	VINH T. LAM	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 February 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-80* is/are pending in the application.

4a) Of the above claim(s) *1-34,42,43 and 56-59* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *35-41,44-55 and 60-80* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 October 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the **first paragraph** of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1. Claim **35** is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding Claim **35**, the speciation as originally filed has failed to provide support for the recitation of "…an input unit … ***first input signals***, ***each***… ***associated*** with ***ALL*** ***the letters of an alphabet*** …". The specification does not reasonably convey one skill in the art how to make or use applicant claimed invention for "…an input unit … ***first input signals***, ***each***… ***associated*** with ***ALL*** ***the letters of an alphabet*** …"

The following is a quotation of the **second paragraph** of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim **35** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The limitation of Claim **35** "…an input unit … ***first input signals***, ***each***… ***associated*** with ***ALL*** ***the letters of an alphabet*** …" is not clear.

If ***each*** of the **first input signals** is associated with ***ALL the letters of an alphabet***, then what ***other first signals*** are associated with?

Are ***other first signals*** associated with numbers and symbols?

Furthermore, the above limitation is contradicted to Claim 36 limitation of "…a second input unit adapted to receive ***second input signals*** ***corresponding*** to the ***letters of the alphabet*** …"

The limitation as shown above in Claim **35** is not only rejected under 35 U.S.C. 112 2nd ¶ but also invoked 35 U.S.C. 112 1st ¶ since there is no disclosure of "…an input unit … ***first input signals***, ***each***… ***associated*** with ***ALL*** ***the letters of an alphabet*** …" in the originally filed specification.

To further advance prosecution, the Examiner interprets "…***ALL*** ***the letters of an alphabet*** …" as "…***the letters of an alphabet*** …".

Appropriate correction is required.

3. Claim **76** recites the limitation " the place " in "…a cursor is moved from the place…". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims **35**-**41**, **44**-**55**, and **60**-**80** are rejected under 35 U.S.C. 103(a) as being unpatentable over **King et al. (US Patent No. 6011554)** in view of **Goren (US Patent No. 7190351).**

Regarding Claim **35**, (Currently Amended) **King et al.** teach a data entry system, comprising:

an input unit (*Col. **6**, Ln. **34**-**35**; Col. **6**, Ln. **28**-**33**, FIG. **1B**, e.g. **56's Left Column***) adapted to receive a plurality of different first input signals (*Col. **6**, Ln. **28**-**33**, FIG. **1B**, e.g. **1, 4,** and **7…***), each associated with a group of symbols (*Col. **6**, Ln. **28**-**33**, FIG. **1B**, e.g. **1, C, Y, K, Ret, Tab, Esc***) and together associated with [all] the letters of an alphabet of a language (*Col. **6**, Ln. **28**-**33**, FIG. **1B**, i.e. **C, Y, K, O, L, X, R, P, Q***); and

a word predictive system (*Col. **6**, Ln. **17**-**20**, FIG. **1A**, i.e. **50***) adapted to select a single word (*Col. **6**, Ln. **38**-**40**; Col. **20**, Ln. **1**-**6**, FIG. **6**, i.e. **done***) from a word database (*Col. **20**, Ln. **12**-**15**, FIG. **6**, i.e. **76***) responsive to a sequence of first input signals provided by a user, while selecting for each of the first input signals in the sequence one of the letters out of the group of symbols with which it is associated (*Col. **8**, Ln. **15**-**24**, FIG. **6***).

However, **King et al.** do not teach that the input unit comprises a plurality of keys arranged in two groups, the keys of each group arranged in a respective single column, wherein each group is configured for use by a finger of a different hand of a user.

In the same field of endeavor, **Goren** teaches the input unit (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **500***) comprises a plurality of keys arranged in two groups (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **504** & **506***), the keys of each group arranged in a respective single column (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **504** or **506***), wherein each group is configured for use by a finger of a different hand of a user (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **Left** and **Right***).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine **King et al.** teaching of a data entry system comprising plurality of input buttons having word prediction capability with **Goren** teaching of arrangement of input buttons in left and right columns *to provide faster and easier data input*.

Regarding Claim **60**, (Currently Amended) **King et al.** teach a data entry system of a device, comprising:

a screen (*Col. **20**, Ln. **1-4**, FIG. **6**, i.e. **53***); and

a processor (*Col. **6**, Ln. **46-52**, FIG. **2**, i.e. **100***) adapted to display on the screen characters entered through the keys (*Col. **6**, Ln. **46-52**, FIG. **2***),

wherein the plurality of keys (*Col. **6**, Ln. **28-33**, FIG. **1B**, i.e. **56***) associated with all the letters of an alphabet of a language (*Col. **6**, Ln. **28-33**, FIG. **1B**, i.e. **A-Z***).

However, **King et al.** do not teach that the keys are arranged in two groups each on an opposite end of the device, the groups being separated at least partially by a section not containing keys, wherein each group is configured for use by a finger of a different hand of a user.

In the same field of endeavor, **Goren** teaches that the keys are arranged in two groups (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **504** & **506***) each on an opposite end of the device (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **Left** and **Right***), the groups being separated at least partially by a section (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **508***) not containing keys, wherein each group is configured for use by a finger of a different hand of a user (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **Left** and **Right***).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine **King et al.** teaching of a data entry system comprising plurality of input buttons having word prediction capability with **Goren** teaching of arrangement of input buttons in left and right columns *to provide faster and easier data input*.

Although **Goren** does not *explicitly* teach a plurality of keys including no more than six keys associated with all the letters of an alphabet of a language.

However, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to recognize that **Goren** *implicitly* discloses a plurality of keys including no more than six keys associated with all the letters of an alphabet of a language would have been an obvious Choice of Design (Col. **22**, Ln**. 17-20**, *FIGs. **1B** or **9***).

Regarding Claim **36**, (Currently Amended) the system of claim 35, wherein **King et al.** further teach comprising:

an output unit (*Col. **20**, Ln. **1-4**, FIG. **6**, i.e. **53***) for displaying the selected word (*Col. **20**, Ln. **12-1**, FIG. **6**, e.g. **done***) to a user; and

a second input unit (*Col. **6**, Ln. **34-35**; Col. **6**, Ln. **28-33**, FIG. **1B**, e.g. **56's Left Column***) adapted to receive second input signals corresponding to the letters of the alphabet (*Col. **6**, Ln. **28-33**, FIG. **1B**, e.g. **S, U, I, M, G, N, B, Z...***),

wherein the word predictive system is adapted to select a word for a sequence of first input signals using received second input signals received after displaying a selected word for the sequence of first input signals (*Col. **20**, Ln. **12-1**, FIG. **6**, e.g. **done***).

Regarding Claim **37**, (Previously presented) the system of claim 36, wherein the second input unit is adapted to receive speech signals corresponding to the letters of the alphabet which is well-known in the art as "Speech Recognition".

Regarding Claim **38**, (Previously presented) the system of claim 37, comprising a recognition system which uses the speech signals corresponding to the letters of the alphabet in selecting for first input signals a single letter from the group of symbols associated with the first signal which is well-known in the art of "Speech Recognition".

Regarding Claim **39**, (Previously presented) the system of claim 35, wherein the input unit comprises a single pressure sensitive pad for receiving the first

input signals, corresponding with the letters of the alphabet which is well-known in the art as “Hand-writing Recognition”.

Regarding Claim **40**, (Currently Amended) **King et al.** and **Goren** teach the system of claim 35.

Although **King et al.** and **Goren** do not explicitly teach that the input device comprises four keys, each key being used to generate one of the first input signals, the four keys together associated with all the letters of the alphabet of the language.

However, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to recognize that the total number of keys associated with all the letters of the alphabet would have been an obvious Choice of Design (as shown in **Goren’s** *FIGs.* ***1B*** *or* ***9***).

Regarding Claim **41**, (Currently Amended) the system of claim 40, wherein **King et al.** teach each of the first input_signals is inputted by a single pressing on a respective one of the four keys (*Col.* ***6****, Ln.* ***33****-****45***).

Regarding Claim **44**, (Previously presented) the system of claim 42, wherein **Goren** teaches the columns are distanced from each other by a distance substantially greater than the widths of the keys (*Col.* ***21****, Ln.* ***19****-****33****, FIG.* ***24B****, i.e.* ***504*** *&* ***506***).

Regarding Claim **45**, (Previously presented) the system of claim 42, wherein **Goren** teaches the columns are located on opposite sides of a screen of the system (*Col.* ***21****, Ln.* ***19****-****33****, FIG.* ***24B****, i.e.* ***504*** *&* ***506***).

Regarding Claims **46** and **69**, (Previously presented) the system of claims 40 and 60 respectively, wherein **Goren** teaches the keys comprise physical keys (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **504** & **506***).

Regarding Claims **47** and **70**, (Previously presented) the system of claim 40 and 60 respectively, wherein **Goren** teaches the keys comprise virtual keys (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **504** & **506***).

Regarding Claim **48**, (Previously presented) the system of claim 40, wherein **King et al.** teach different interactions with the keys correspond to different signals (*Col. **6**, Ln. **28-33**, FIG. **1B**, e.g. **1, 4,** and **7…***).

Regarding Claim **49**, (Previously presented) the system of claim 48, wherein **King et al.** teach the keys respond to two different types of interactions, a first type of interaction corresponds to respective ones of the first signals and a second type of interaction corresponds to symbols other than those represented by the first signals (*Col. **6**, Ln. **28-33**, FIG. **1B**, e.g. **1, C, Y,** or **K…***).

Regarding Claim **50**, (Previously presented) the system of claim 49, wherein **King et al.** teach the keys are associated with respective ones of the first signals when pressed slightly and with other symbols when pressed heavily (*Col. **6**, Ln. **28-33**, FIG. **1B**, e.g. **1, C, Y,** or **K…***).

Regarding Claim **51**, (Previously presented) the system of claim 35, wherein **King et al.** teach each of the four input signals corresponds to at least six letters (*Col. **6**, Ln. **28-33**, FIG. **1B**, e.g. **4, O, L, X, &, $,** and **%** *).

Regarding Claim **52**, (Previously presented) the system of claim 51, wherein **King et al.** teach two of the input signals correspond to six letters (*Col. **6**, Ln. **28-33**, FIG. **1B**, e.g. **C, Y, K, O, L,** and **X***).

Regarding Claims **53** and **67**, (Previously presented) **King et al.** and **Goren** teach the system of claims 40 and 60 respectively.

Although **King et al.** and **Goren** do not explicitly teach that the four keys are arranged, such that a user can touch all the four keys concurrently with two fingers, in a manner which allows selectively actuating each of the keys by one of the two fingers.

However, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to recognize that the size of the keys is an obvious Choice of Design.

Regarding Claim **54**, (Previously presented) the system of claim 53, wherein the two fingers comprise two thumbs which is an obvious user choice.

Regarding Claim **55**, (Previously presented) **King et al.** and **Goren** teach the system of claim 53.

Although **King et al.** and **Goren** do not explicitly teach that the four keys are arranged such that a user can touch all the keys concurrently with a single finger, in a manner which allows selectively actuating each of the keys by the finger.

However, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to recognize that size of the keys is an obvious Choice of Design.

Regarding Claim **61,** (Previously presented) the system of claim 60, wherein **Goren** teaches the plurality of keys are arranged in two groups each on an opposite end of the screen (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **Left** and **Right***).

Regarding Claim **62**, (Previously presented) the system of claim 60, wherein **Goren** teaches the plurality of keys are organized in two columns, one on one end of the device and a second one on an opposite end of the device (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **Left** and **Right***)..

Regarding Claim **63**, (Previously presented) the system of claim 60, **Goren** teaches further comprising a pointing device on a side of the device opposite the screen (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **510***).

Regarding Claim **64**, (Previously presented) the system of claim 60, wherein **Goren** teaches at least two of the no more than six keys are located on a right side of the screen and at least two of the no more than six keys are on a left side of the screen (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **504** & **506***).

Regarding Claim **65**, (Previously presented) the system of claim 64, wherein **King et al.** teach the screen has a larger horizontal axis than vertical axis in its letter display orientation (*FIG. **6***).

Regarding Claim **66**, (Previously presented) the system of claim 60, wherein **Goren** teaches the plurality of keys comprise four keys associated with all the letters of the alphabet (Col. **22**, Ln**. 17-20**, *FIGs. **1B** or **9***).

Regarding Claim **68**, (Previously presented) the system of claim 60, wherein **Goren** teaches the plurality of keys are arranged in two groups of equal numbers of keys (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **504** & **506***).

Regarding Claim **71**, (Previously presented) the system of claim 60, wherein **King et al.** teach each group includes at least one additional key not associated with letters (*FIG. **1B***).

Regarding Claim **72**, (Previously presented) the system of claim 60, wherein **King et al.** teach each group includes exactly four keys on its end of the device (*FIG. **1B**; i.e. including **SHIFT***).

Regarding Claim **73**, (Previously presented) the system of claim 60, wherein each group includes exactly three keys on its end of the device (*Col. **6**, Ln. **34-35**; Col. **6**, Ln. **28-33**, FIG. **1B**, e.g. **56's Left** and **Right Columns***).

Regarding Claim **74**, (New) the system of claim 36, wherein **King et al.** teach the word predictive system is adapted to provide a first word for a sequence of first input signals and to provide a second word different from the first word, for the same sequence of first input signals, responsive to receiving a second input signal (*FIG. **6***).

Regarding Claim **75**, (New) the system of claim 36, wherein **King et al.** teach the second signals which the second input unit is adapted to receive are not affected by the specific first input signals received (*FIG. **6***).

Regarding Claim **76**, (New) the system of claim 36, wherein **King et al.** teach the word predictive system is adapted to select a word for a sequence of first

input signals using second input signals received after a cursor is moved from [the] place it was located immediately after a corresponding first signal was entered (*Col. **20**, Ln. **12**-**1**, FIG. **6**, e.g. **done***).

Regarding Claim **77**, (New) the system of claim 35, wherein **Goren** teaches the plurality of different first input signals comprise four first input signals associated with all the letters of the alphabet (Col. **22**, Ln**. 17-20**, *FIGs. **1B** or **9***).

Regarding Claim **78**, (New) the system of claim 35, wherein **Goren** teaches both groups include the same number of keys (*Col. **21**, Ln. **19**-**33**, FIG. **24B**, i.e. **504** & **506***).

Regarding Claim **79**, (New) the system of claim 35, wherein **Goren** teaches the groups are located on opposite ends of the device (*Col. **21**, Ln. **19**-**33**, FIG. **24B**, i.e. **504** & **506***).

Regarding Claim **80**, (New) the system of claim 35, wherein **Goren** teaches the input signals together associated with all the letters of the alphabet are generated by interactions of the fingers with up to six of the keys (Col. **22**, Ln**. 17-20**, *FIGs. **1B** or **9***).

Response to Arguments/Amendments/Remarks

5. Applicant's arguments with respect to claim(s) 35-41, 44-55, and 60-73 have been considered but are moot in view of the new ground(s) of rejection.

6. Claims **1**-**34**, **42**-**43**, and **56**-**59** are cancelled.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VINH T. LAM whose telephone number is (571) 270-3704. The examiner can normally be reached on M-F (7:00-4:30) EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on (571) 272-7674. The fax phone number for the organization where this application or proceeding is assigned is 571-270-4704.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Vinh T Lam/
Examiner, Art Unit 2629

/Amare Mengistu/
Supervisory Patent Examiner, Art Unit 2629

Notice of References Cited	Application/Control No. 10/553,575	Applicant(s)/Patent Under Reexamination GHASSABIAN, BENJAMIN FIR	
	Examiner VINH T. LAM	Art Unit 2629	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-6,011,554 A	01-2000	King et al.	715/811
*	B	US-6,307,549 B1	10-2001	King et al.	715/810
*	C	US-6,359,572 B1	03-2002	Vale, Peter O.	341/23
*	D	US-6,356,866 B1	03-2002	Pratley et al.	704/9
*	E	US-2002/0067335 A1	06-2002	MILLINGTON, JEFFREY ALAN	345/156
*	F	US-2004/0070567 A1	04-2004	Longe et al.	345/156
*	G	US-7,190,351 B1	03-2007	Goren, Michael	345/173
*	H	US-7,218,249 B2	05-2007	Chadha, Lovleen	341/23
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10553575	GHASSABIAN, BENJAMIN FIROOZ
	Examiner	Art Unit
	VINH T LAM	2629

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	07/30/2008	03/31/2009	11/09/2009	04/16/2010					
	1	÷	N	-	N					
	2	÷	N	-	N					
	3	÷	N	-	N					
	4	÷	N	-	N					
	5	÷	N	-	N					
	6	÷	N	-	N					
	7	÷	N	-	N					
	8	÷	N	-	N					
	9	÷	N	-	N					
	10	÷	N	-	N					
	11	÷	N	-	N					
	12	÷	N	-	N					
	13	÷	N	-	N					
	14	÷	N	-	N					
	15	÷	N	-	N					
	16	÷	N	-	N					
	17	÷	N	-	N					
	18	÷	N	-	N					
	19	÷	N	-	N					
	20	÷	N	-	N					
	21	÷	N	-	N					
	22	÷	N	-	N					
	23	÷	N	-	N					
	24	÷	✓	-	N					
	25	÷	✓	-	N					
	26	÷	✓	-	N					
	27	÷	✓	-	N					
	28	÷	✓	-	N					
	29	÷	✓	-	N					
	30	÷	✓	-	N					
	31	÷	✓	-	N					
	32	÷	✓	-	N					
	33		✓	-	N					
	34		✓	-	N					
	35			N	✓					

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10553575	GHASSABIAN, BENJAMIN FIROOZ
	Examiner	Art Unit
	VINH T LAM	2629

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	07/30/2008	03/31/2009	11/09/2009	04/16/2010					
	36			N	✓					
	37			N	✓					
	38			N	✓					
	39			N	✓					
	40			N	✓					
	41			N	✓					
	42			N	N					
	43			N	N					
	44			N	✓					
	45			N	✓					
	46			N	✓					
	47			N	✓					
	48			N	✓					
	49			N	✓					
	50			N	✓					
	51			N	✓					
	52			N	✓					
	53			N	✓					
	54			N	✓					
	55			N	✓					
	56			N	N					
	57			N	N					
	58			N	N					
	59			N	N					
	60			N	✓					
	61			N	✓					
	62			N	✓					
	63			N	✓					
	64			N	✓					
	65			N	✓					
	66			N	✓					
	67			N	✓					
	68			N	✓					
	69			N	✓					
	70			N	✓					

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10553575	GHASSABIAN, BENJAMIN FIROOZ
	Examiner	Art Unit
	VINH T LAM	2629

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	07/30/2008	03/31/2009	11/09/2009	04/16/2010					
	71			N	✓					
	72			N	✓					
	73			N	✓					
	74				✓					
	75				✓					
	76				✓					
	77				✓					
	78				✓					
	79				✓					
	80				✓					

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10553575	GHASSABIAN, BENJAMIN FIROOZ
	Examiner	Art Unit
	VINH T LAM	2629

SEARCHED			
Class	Subclass	Date	Examiner
345	156-172	3/31/2009	Vinh Lam

SEARCH NOTES		
Search Notes	Date	Examiner
Search Inventors. No ODP.	7/30/2008	Vinh Lam
Search Internet for synonyms and technical terms.	3/31/2009	Vinh Lam
Search Class/Subclass with 2629 QEM support.	3/31/2009	Vinh Lam
Search EAST for prior arts.	4/16/2010	Vinh Lam

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

/Vinh T Lam/ Examiner, Art Unit 2629	

Request For Continued Examination (RCE) Transmittal

Address to:
Mail Stop RCE
Commissioner for Patents
Randolph Building, 401 Dulany Street
Alexandria, Virginia 22314

Application Number	10/553,575
Filing Date	September 26, 2006
First Named Inventor	Benjamin Firooz GHASSABIAN
Confirmation No.	7464
Art Unit	2629
Examiner Name	Vinh Tang Lam
Attorney Docket Number	GHASSABIAN12

This is a Request for Continued Examination (RCE) under 37 C.F.R. § 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CF R 1.114 does not apply to any utility or plat application filed prior to June 8, 1995, or to any design application. See Instruction Sheet for RCEs (not to be submitted to USPTO) on page 2.

1. Submission required under 37 C.F.R. 1.114 Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

a. ☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

i. ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

ii. ☐ Other _____

b. ☒ Enclosed

i. ☒ Amendment/Reply

ii. ☐ Affidavit(s)/Declaration(s)

iii. ☒ Information Disclosure Statement (IDS) and supporting communication

iv. ☐ Other _____

2. Miscellaneous

a. ☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of_ months. (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required).

b. ☐ Other _____

3. Fees The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when RCE is filed.

☒ Applicant(s) claim small entity status. See 37 C.F.R. §1.27.

The following fees are being paid herewith:

i. ☒ RCE fee required under 37 CFR 1.17(e) $405.00

ii. ☒ Extension of time fee (37 CFR. 1.136 and 1.17): $245.00 for 2 month(s)
(☐ $ already paid for month(s) extension of time on)

iii. ☐ Suspension fee (see 2a above) $130.00

iv. ☐ Other _____

a. ☐ Check in the amount of $ _____ enclosed (Check No. _____)

b. ☒ Authorization is submitted herewith for payment by credit card in the amount of $ 650.00.

c. ☒ The director is hereby authorized to charge any underpayment or credit any overpayment with respect to this RCE to Deposit Account No. 02-4035.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

4. ☒ Provisional extension of time if needed. Applicants authorize any charge of additional fees **(except issue fee)** that may be required in connection with this application to Deposit Account No. 02-4035.

SIGNATURE OF APPLICANT, ATTORNEY, AGENT REQUIRED

Name (Print/Type)	Ronni S. Jillions	*Registration No. (Attorney/Agent)*	31,979
Signature	/Ronni S. Jillions/	*Date*	September 28, 2010

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

ATTY.'S DOCKET: GHASSABIAN12

In re Application of:	)	Art Unit: 2629
	)	
Benjamin GHASSABIAN et al.	)	Examiner: Lam, Vinh Tang
	)	
Appln. No.: 10/553,575	)	Washington, D.C.
	)	
Date Filed: September 26, 2006	)	Confirmation No. 7464
	)	
For: SYSTEMS TO ENHANCE DATA ENTRY IN MOBILE AND FIXED ENVIRONMENT	)	September 28, 2010

AMENDMENT

Honorable Commissioner for Patents
U.S. Patent and Trademark Office
Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Sir:

In response to the Office Action of **April 29, 2010**, the period for response having been extended for two-month by the concurrent filing of a request for two- month extension of time and payment of the appropriate fee, please amend as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 9 of this paper.

Amendments to the Claims

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1-34. **(Cancelled)**

35. **(Currently Amended)** A data entry system, comprising:

an input unit adapted to receive a plurality of different first input signals, each associated with a group of symbols, and the first input signals are together associated with all the letters of an alphabet of a language; and

a word predictive system adapted to select a single word from a word database responsive to a sequence of first input signals provided by a user, while selecting for each of the first input signals in the sequence one of the letters out of the group of symbols with which it is associated,

wherein the input unit comprises a plurality of keys arranged in two groups, the keys of each group arranged in a respective single column, wherein each group is configured for use by a finger of a different hand of a user, such that a user can touch all the keys of each group concurrently with a single finger, in a manner which allows selectively actuating each of the keys by the finger.

36. **(Previously Presented)** The system of claim 35, comprising:

an output unit for displaying the selected word to a user; and

a second input unit adapted to receive second input signals corresponding to the letters of the alphabet,

wherein the word predictive system is adapted to select a word for a sequence of first input signals using received second input signals received after displaying a selected word for the sequence of first input signals.

37. **(Previously presented)** The system of claim 36, wherein the second input unit is adapted to receive speech signals corresponding to the letters of the alphabet.

38. **(Previously presented)** The system of claim 37, comprising a recognition system which uses the speech signals corresponding to the letters of the alphabet in selecting for first input signals a single letter from the group of symbols associated with the first signal..

39. **(Previously presented)** The system of claim 35, wherein the input unit comprises a single pressure sensitive pad for receiving the first input signals, corresponding with the letters of the alphabet.

40. **(Previously presented)** The system of claim 35, wherein the input device comprises four keys, each key being used to generate one of the first input signals, the four keys together associated with all the letters of the alphabet of the language.

41. **(Previously presented)** The system of claim 40, wherein each of the first input signals is inputted by a single pressing on a respective one of the four keys.

42-43. **(Cancelled)**

44. **(Previously presented)** The system of claim 42, wherein the columns are distanced from each other by a distance substantially greater than the widths of the keys.

45. **(Previously presented)** The system of claim 42, wherein the columns are located on opposite sides of a screen of the system.

46. **(Previously presented)** The system of claim 40, wherein the keys comprise physical keys.

47. **(Previously presented)** The system of claim 40, wherein the keys comprise virtual keys.

48. **(Previously presented)** The system of claim 40, wherein different interactions with the keys correspond to different signals.

49. **(Previously presented)** The system of claim 48, wherein the keys respond to two different types of interactions, a first type of interaction corresponds to respective ones of the first signals and a second type of interaction corresponds to symbols other than those represented by the first signals.

50. **(Previously presented)** The system of claim 49, wherein the keys are associated with respective ones of the first signals when pressed slightly and with other symbols when pressed heavily.

51. **(Previously presented)** The system of claim 35, wherein each of the four input signals corresponds to at least six letters.

52. **(Previously presented)** The system of claim 51, wherein two of the input signals correspond to six letters.

53. **(Cancelled)**

54. **(Currently Amended)** The system of claim ~~53~~ 35, wherein the ~~two fingers~~ finger of each hand comprises ~~comprise~~ ~~two~~a ~~thumbs~~ thumb.

55-59. **(Cancelled)**

60. **(Currently Amended)** A data entry system of a device, comprising:

a plurality of keys including no more than six keys associated with all the letters of an alphabet of a language;

a screen; and

a processor adapted to display on the screen characters entered through the keys,

wherein the plurality of keys associated with all the letters of an alphabet of a language are arranged in two groups each on an opposite end of the device, the groups being separated at least partially by a section not containing keys, wherein each group is configured for use by a finger of a different hand of a user,

wherein the plurality of keys associated with all the letters of the alphabet are arranged such that a user can touch all the keys concurrently with two fingers, in a manner which allows selectively actuating each of the keys by one of the two fingers.

61. **(Previously presented)** The system of claim 60, wherein the plurality of keys are arranged in two groups each on an opposite end of the screen.

62. **(Previously presented)** The system of claim 60, wherein the plurality of keys are organized in two columns, one on one end of the device and a second one on an opposite end of the device.

63. **(Previously presented)** The system of claim 60, comprising a pointing device on a side of the device opposite the screen.

64. **(Previously presented)** The system of claim 60, wherein at least two of the no more than six keys are located on a right side of the screen and at least two of the no more than six keys are on a left side of the screen.

65. **(Previously presented)** The system of claim 64, wherein the screen has a larger horizontal axis than vertical axis in its letter display orientation.

66. **(Previously presented)** The system of claim 60, wherein the plurality of keys comprise four keys associated with all the letters of the alphabet.

67. **(Cancelled)**

68. **(Previously presented)** The system of claim 60, wherein the plurality of keys are arranged in two groups of equal numbers of keys.

69. **(Previously presented)** The system of claim 60, wherein the keys comprise physical keys.

70. **(Previously presented)** The system of claim 60, wherein the keys comprise virtual keys.

71. **(Previously presented)** The system of claim 60, wherein each group includes at least one additional key not associated with letters.

72. **(Previously presented)** The system of claim 60, wherein each group includes exactly four keys on its end of the device.

73. **(Previously presented)** The system of claim 60, wherein each group includes exactly three keys on its end of the device.

74. **(Previously presented)** The system of claim 36, wherein the word predictive system is adapted to provide a first word for a sequence of first input signals and to provide a second word different from the first word, for the same sequence of first input signals, responsive to receiving a second input signal.

75. **(Previously presented)** The system of claim 36, wherein the second signals which the second input unit is adapted to receive are not affected by the specific first input signals received.

76. **(Currently Amended)** The system of claim 36, wherein the word predictive system is adapted to select a word for a sequence of first input signals using second input signals received after a cursor is moved from ~~the~~ a place it was located at immediately after a corresponding first signal was entered.

77. **(Previously presented)** The system of claim 35, wherein the plurality of different first input signals comprise four first input signals associated with all the letters of the alphabet.

78. **(Previously presented)** The system of claim 35, wherein both groups include the same number of keys.

79. **(Previously presented)** The system of claim 35, wherein the groups are located on opposite ends of the device.

80. **(Previously presented)** The system of claim 35, wherein the input signals together associated with all the letters of the alphabet are generated by interactions of the fingers with up to six of the keys.

REMARKS

The present application includes claims 35-41, 44-52, 54, 60-66 and 68-80. Claims 35, 51, 54 and 60 were amended. Claims 53, 55 and 67 were cancelled.

112 rejections

Claim 35 was rejected under 35 USC 112, first paragraph, as failing to comply with the written description requirement. The Examiner stated that the specification does not support the limitation: "first input signals each … associated with all the letters of an alphabet".

Claim 35 was rejected under 35 USC 112, second paragraph, as being indefinite. The Examiner asked how each first input signal can be associated with all the letters of an alphabet.

Applicant respectfully traverses these rejections and will discuss them together with respect to claim 35, as they are related and depend on the same set of facts.

Claim 35 does not require that each first input signal be associated with all the letters of an alphabet, but rather that each first input signal is associated with a group of symbols such that together the first signals are associated with all the letters of an alphabet of a language. While this was clear from the previously presented claim, claim 35 is amended to further clarify this point. This limitation finds support for example in Figs. 8 and 47e.

Claim 36 requires "a second input unit adapted to receive second input signals corresponding to the letters of the alphabet". Applicant respectfully submits that this does not contradict claim 35, as each letter can be associated with both a

first signal and a second signal, as described, for example, on page 38, lines 4-5 of the specification.

Claim 76 was rejected for lack of antecedent for "the place". The claim was amended to state: "a place".

In view of these amendments and remarks, withdrawal of these rejections is respectfully requested.

103 rejections

Claims 35-41, 44-55 and 60-80 were rejected under 35 USC 103(a) as being unpatentable over King et al. (U.S. Patent No. 6,011,554) in view of Goren (U.S. Patent No. 7,190,351).

In response, claim 35 is amended to include a limitation similar to that of claim 53. Specifically, claim 35 now requires:

"a plurality of keys arranged in two groups, … such that a user can touch all the keys of each group concurrently with a single finger, in a manner which allows selectively actuating each of the keys by the finger."

In the rejection of claim 53, the Examiner acknowledged that this is not taught by King or Goren, but stated that "it would have been obvious … that the size of the keys is an obvious choice of design."

Applicant respectfully disagrees. The above limitation cannot be met merely by changing the size of the keys, as small keys will probably not allow "selectively actuating each of the keys by the finger", unless specifically designed to allow such actuation.

The importance of this feature is discussed on page 225, lines 6-11, of the specification:

"This permits to not remove (or rarely remove) the fingers from the keys during text entry and therefore a user knows which key to press without looking at the keypad. This permits fast typing even while said user is in motion. It is understood that for this purpose, the size of the keys, the distance between them, and other parameters such as physical characteristics of said keys, may be such that to optimize the above-mentioned procedure."

Independent claim 60

Claim 60 was amended to require "wherein the plurality of keys associated with all the letters of the alphabet are arranged such that a user can touch all the keys concurrently with two fingers, in a manner which allows selectively actuating each of the keys by one of the two fingers".

As discussed above regarding claim 35, this is not taught or suggested by King or Goren.

Dependent claims

The dependent claims are allowable at least by the virtue of their parent claims. Nonetheless, at least some of the dependent claims add further patentability over claim 35.

Claim 40, for example, requires four keys, each key being used to generate one of the first input signals, the four keys together associated with all the letters of the alphabet of the language.

The Examiner stated that the total number of keys associated with the letters of the alphabet is an obvious choice of design.

Applicant respectfully disagrees. The problem of entering text in small devices which do not have room for a full scale keyboard is an open issue for which thousands of suggestions have been made. The number of keys used to represent all the letters of the alphabet has important implications on the chances of guessing words by the word predictive system, on the sizes of the keys and their arrangement, as well as other issues. Therefore, the requirement of claim 40 cannot be considered a mere design choice.

Conclusion

Applicant respectfully requests reconsideration and withdrawal of the outstanding rejections of record. Applicant respectfully submits that in view of the above amendments and arguments the claims are allowable. Allowance of the application is respectfully awaited. If, however, the Examiner does not see fit to allow the claims, applicants respectfully request, following the provisions of MPEP 713.01, that the Examiner notify applicant's agent after he has considered the effect of the applicant's current response so that a telephone interview between the Examiner and applicant's agent can be arranged before a further action is issued. Applicant is of the opinion that such a telephone interview can expedite the case to final action. The undersigned can be reached at 202-628-5197.

Respectfully submitted,

BROWDY AND NEIMARK, P.L.L.C.
Attorneys for Applicant(s)

By /Ronni S. Jillions/
Ronni S. Jillions
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RSJ:srd
Telephone No.: (202) 628-5197
Facsimile No.: (202) 737-3528
\\bnsbs\vol1\BN\B\bend\ghassabian12\pto\2010-09-28Amendment.doc

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Atty. Docket: GHASSABIAN 12

In re Application of:	)	Conf. No.: 7464
Firooz GHASSABIAN et al.	)	
IA No: PCT/US2004/012082	)	Art Unit: 2629
IA Filed: April 19, 2004	)	Examiner: V. T. LAM
Appln. No.: 10/553,575	)	Washington, D.C.
For: SYSTEMS TO ENHANCE DATA ENTRY IN MOBILE AND FIXED…	)	September 28, 2010

INFORMATION DISCLOSURE STATEMENT [IDS] SUPPORTING COMMUNICATION

Honorable Commissioner for Patents
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Randolph Building, Mail Stop Amendment
401 Dulany Street
Alexandria, VA 22314

Sir:

Submitted herewith is Information Disclosure Statement by Applicant form, PTO-1449. Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

Respectfully submitted,

BROWDY AND NEIMARK
Attorneys for Applicant(s)

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INFORMATION DISCLOSURE CITATION (Use several sheets if necessary)	ATTY DOCKET NO. **GHASSABIAN12**	SERIAL NO. **10/553,575**
	APPLICANT(S) **GHASSABIAN**	
	FILING **09/26/2006**	GROUP **2629**

U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	Filing date if appropriate
	1.	4,769,845	9/6/88	Nakamura			
	2.	5,017,030	05/21/91	Crews			
	3.	5,305,205	04/19/94	Weber et al.			
	4.	5,311,175	10/5/94	Waldman			
	5.	5,467,324	11/14/95	Houlihan			
	6.	5,473,726	12/5/95	Marshall			
	7.	5,659,611	08/19/97	Saksa			
	8.	5,675,687	7/10/97	Wood			

U.S. PATENT APPLICATION PUBLICATIONS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	Filing date if appropriate
	9.	2001/0018351	08/30/01	Hino et al			
	10.	2001/0030668	10/18/01	Erten et al.			
	11.	2001/0048413	6/12/01	Tabata			
	12.	2002/0065662	05/30/02	Sherman			
	13.	2002/0180698	5/12/02	Kaelbling			
	14.	2003/0030573	02/13/03	Ure			

FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	TRANSLATION	
							YES	NO
	15.	WO 2004/095414	4/11/04	Ghassabian				
	16.	WO 2003/007288	01/23/03	Ghassabian				
	17.	WO 99/25152	05/20/99	Carroll et al.				
	18.	WO 97/04580	6/2/97	Schroeder et al.				
	19.	WO 02/061558	8/8/02	Majer				

OTHER DOCUMENTS (Including Author, Title, Date Pertinent Pages, Etc.)

	20.	Mona Singh of Ericsson, Inc.; Method for aiding speech recognition; Nov 10, 2000.

EXAMINER	**DATE CONSIDERED**

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form PTO-A820 Patent and Trademark Office*U.S. DEPARTMENT OF COMMERCE
(also form PTO-1449)

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U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	Filing date if appropriate
	21.	5,689,547	11/18/97	Molne			
	22.	5,767,842	06/16/98	Korth			
	23.	5,797,089	08/18/98	Nguyen			
	24.	5,818,437	6/10/98	Grover et al.			
	25.	5,901,222	4/5/99	Macor			
	26.	5,936,556	10/8/99	Sakita			
	27.	5,943,625	08/24/99	Yeom et al.,			
	28.	5,952,585	09/14/99	Trantzas et al.			

U.S. PATENT APPLICATION PUBLICATIONS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	Filing date if appropriate
	29.	2003/0048262	03/13/03	Wu et al.			
	30.	2003/0193478	10/16/03	Ng et al.			
	31.	2003/0204403	10/30/03	Browning			
	32.	2003/0216915	11/20/03	Jianlei Xie			
	33.	2003/122784	3/7/03	Shkolnikov			
	34.	2004/0056844	03/25/04	Gutowitz et al.			
	35.	2004/0204011	10/14/04	Lyustin et al.			
	36.	2005/0084079	04/21/05	Lang			

FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	TRANSLATION	
							YES	NO
	37.	EP 0898223	02/24/99	Narayanaswamy et al.				
	38.	EP 0949578	10/13/99	Sugiura				
	39.	EP 1109384	06/20/01	Paleiov et al.				
	40.	EP 1164774	12/19/01	Wilson et al.				
	41.	GB 2360622	09/26/01	Walch				
	42.	EP 0810515	3/12/97	Shieh				

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U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	Filing date if appropriate
	43.	5,953,541	09/14/99	King et al.			
	44.	5,982,302	11/9/99	Ure			
	45.	6,003,072	12/14/99	Gerritsen et al.			
	46.	6,011,554	1/4/00	King et al.			
	47.	6,029,068	02/22/00	Takahashi et al.			
	48.	6,043,761	03/28/00	Burrell			
	49.	6,073,033	6/6/00	Campo			
	50.	6,128,514	3/10/00	Griffith et al			
	51.	6,542,090	1/4/03	Tadano et al.			

U.S. PATENT APPLICATION PUBLICATIONS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	Filing date if appropriate
	52.	2005/0131687	06/16/05	Sorrentino			
	53.	2005/0181777	08/18/05	Kim			
	54.	2006/0073818	6/4/06	Scott			
	55.	2006/0172764	3/8/06	Makino			
	56.	2006/0190256	08/24/06	Stephanick et al.			
	57.	2007/0200827	08/30/07	Samal			
	58.	2008/0045247	02/21/08	Wilson			
	59.	2008/0109432	8/5/08	Ostergaard et al.			

FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	TRANSLATION	
							YES	NO
	60.	WO 01/31788	5/1/01	Ghassabian				
	61.	WO 97/04580	6/2/97	Schroeder et al.				
	62.	WO 97/16935	9/5/97	Molne				
	63.	WO 98/35481	08/13/98	Ure				
	64.	WO 98/58346	12/23/98	Walch				
	65.	WO 02/08880	01/31/02	Wessler et al				

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	FILING **09/26/2006**	GROUP **2629**

U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	Filing date if appropriate
	66.	6,144,358	10/7/00	Narayanaswamy et al.			
	67.	6,216,017	10/4/01	Lee et al.			
	68.	6,223,059	4/24/01	Haestrup			
	69.	6,226,501	1/5/01	Weadon et al			
	70.	6,246,570	6/12/01	Kim			
	71.	6,259,771	10/7/01	Kredo et al.			
	72.	6,278,384	08/21/08	Ide			
	73.	6,286,064	4/9/01	King et al			
	74.	6,337,914	8/1/02	Phillipps			
	75.	6,346,894	2/12/02	Connolly et al.			
	76.	6,385,582	7/5/02	Iwata			
	77.	6,560,320	6/5/03	Paleiov et al.			
	78.	6,587,818	7/1/03	Kanevsky et al.			
	79.	6,734,881	11/5/04	Will			
	80.	6,868,140	03/15/05	Myers et al.			

U.S. PATENT APPLICATION PUBLICATIONS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	Filing date if appropriate
	81.	2004/0049388	11/03/2004	Roth et al.			

FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	TRANSLATION	
							YES	NO
	82.	WO 99/15952	04/01/99	Tegic communications				
	83.	WO 01/82043	11/01/01	Openwave systems				
	84.	EP 1271900	1/2/03	Kaelbling				
	85.	EP 0840287	5/6/98	Huang				
	86.	EP 1699065	9/6/06	Levy				
	87.	FR 2840488	12/5/03	Gillot			√	

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U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	Filing date if appropriate
	88.	6,925,154	2/8/05	Gao et al.			
	89.	6,927,908	9/8/05	Stark			
	90.	7,020,270	03/28/06	Ghassabian			
	91.	7,027,990	11/4/06	Sussman			
	92.	7,055,219	6/6/06	Shiba			
	93.	7,143,043	11/28/06	Vandermeijden			
	94.	7,145,554	5/12/06	Bachmann			
	95.	7,170,496	01/30/07	Middleton			
	96.	7,174,175	6/2/07	Nagamine			
	97.	7,181,240	02/20/07	Kawamoto			
	98.	7,260,259	08/27/07	Lengen			
	99.	7,382,871	3/6/08	Ure			

U.S. PATENT APPLICATION PUBLICATIONS

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FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	TRANSLATION	
							YES	NO
	100.	GB 2378554	2/12/03	Tzeng				
	101.	GB 1320895	6/20/73	Benson				
	102.	EP 1383034	1/21/04	Kato				
	103.	GB 2406476	03/30/05	Sorrentino				
	104.	CN 1015859	3/11/92	Changyyuan			√	
	105.	CN 1131764	09/25/96	Whelpley			√	
	106.	CN 1153353	2/7/97	Tatsuhiro et al.			√	
	107.	JP 10319879	4/12/98	Kujirada			√	
	108.	JP 11039078	12/2/99	Sakita			√	
	109.	JP 11095792	9/4/99	Kato el al.			√	

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	FILING **09/26/2006**	GROUP **2629**

U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	Filing date if appropriate
	110.	6,894,679	05/17/05	Suzuki			
	111.	6,392,640	05/21/2002	Will			

U.S. PATENT APPLICATION PUBLICATIONS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	Filing date if appropriate

FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	TRANSLATION	
							YES	NO
	112.	JP 11134096	05/21/99	Kato			√	
	113.	JP 11184609	9/7/99	Nagaho			√	
	114.	JP 2000068882	3/3/00	Iizuka			√	
	115.	JP 2000069149	3/3/00	Kita			√	
	116.	JP 2000152202	05/30/00	Iizuka			√	
	117.	JP 2000242402	8/9/00	Ioku			√	
	118.	JP 2000349865	12/15/00	Yamada et al.			√	
	119.	JP 2001016635	01/19/01	Nagase et al.			√	
	120.	JP 2001109740	04/20/01	Ishizuka et al.			√	
	121.	JP 3007007U	01/23/91					
	122.	JP 3156627	4/7/91	Tsuchida			√	
	123.	JP 4330830	11/18/92	Ishii			√	
	124.	JP 7160387	06/23/95	Hara			√	
	125.	JP 8275239	10/18/96	Matsubara et al.			√	

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Form PTO-A820 Patent and Trademark Office*U.S. DEPARTMENT OF COMMERCE
(also form PTO-1449)

Electronic Patent Application Fee Transmittal	
Application Number:	10553575
Filing Date:	26-Sep-2006
Title of Invention:	Systems to enhance data entry in mobile and fixed environment
First Named Inventor/Applicant Name:	Benjamin Firooz Ghassabian
Filer:	Roger Lowen Browdy/Sharnita Davenport
Attorney Docket Number:	GHASSABIAN12
Filed as Small Entity	

U.S. National Stage under 35 USC 371 Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 2 months with $0 paid	2252	1	245	245

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Request for continued examination	2801	1	405	405
		Total in USD ($)		**650**

Electronic Acknowledgement Receipt

EFS ID:	8518069
Application Number:	10553575
International Application Number:	
Confirmation Number:	7464
Title of Invention:	Systems to enhance data entry in mobile and fixed environment
First Named Inventor/Applicant Name:	Benjamin Firooz Ghassabian
Customer Number:	01444
Filer:	Roger Lowen Browdy/Sharnita Davenport
Filer Authorized By:	Roger Lowen Browdy
Attorney Docket Number:	GHASSABIAN12
Receipt Date:	28-SEP-2010
Filing Date:	26-SEP-2006
Time Stamp:	17:34:22
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$650
RAM confirmation Number	4536
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Request for Continued Examination (RCE)	2010-09-28RCE.pdf	24413 5bb03fafa9a41b0edd3f2a82bfc82fef63372eb5	no	1
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Information:					
2		2010-09-28Amendment.pdf	53557 7a4aa3dd934b030db3756359d823e52d9d5a6908	yes	12
	Multipart Description/PDF files in .zip description				
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	Amendment Submitted/Entered with Filing of CPA/RCE		1	1	
	Claims		2	8	
	Applicant Arguments/Remarks Made in an Amendment		9	12	
Warnings:					
Information:					
3	Transmittal Letter	2010-09-28_IDS_Supporting_Communication.pdf	14779 d7a23d09359a16a5c5ba663c4294726c363d2361	no	1
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4	Information Disclosure Statement (IDS) Filed (SB/08)	2010-09-28Form_1449.pdf	72294 f3cf0d63a3695add4d2614e6693bd4339224fd33	no	6
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36	Foreign Reference	JP2000349865A.pdf	1056640 cf61e5091655c95e6bcd79caf106ed0da42f30df	no	12
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37	Foreign Reference	JP2001016635A.pdf	1136036 0a797b56eaaf1f8f11698fd504f00e25b4e72be4	no	11
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38	Foreign Reference	JP2001109740A.pdf	1315468 22f08b1021956a7a44e8429bfca9a79f039f2a03	no	13
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39	Foreign Reference	WO0131788A9.pdf	3226672 e35820a1c621af6c4e84dcd9c37b76988b3fb20f	no	99
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Information:					
42	Foreign Reference	WO02061558.pdf	677400 215f937ebf327d7641491fce68e875ed647f3af3	no	19
Warnings:					
Information:					
43	Foreign Reference	WO03007288.pdf	4396231 57b5936ab7f7bcf2b111e9fd4b3f6573d0e2e29a	no	82

Warnings:					
Information:					
44	Foreign Reference	WO04095414.pdf	11383843 7fefc15911d1fcc44c370216b8bdfd052ef9da94	no	319
Warnings:					
Information:					
45	Foreign Reference	WO9523476A1.pdf	914487 acd56ec3c6d592d1dcae699618eacf0fbbe6abbb	no	22
Warnings:					
Information:					
46	Foreign Reference	WO9704580.pdf	1989471 8fbc6389fd0f3a6d31d39fec044dc6f79557e54b	no	53
Warnings:					
Information:					
47	Foreign Reference	WO9835481A2.pdf	1084002 d7a6c1e26e238c68d20fef4ce157c8176015eb7d	no	33
Warnings:					
Information:					
48	Foreign Reference	WO9858346A1.pdf	1123815 5b5388ace6b41565535a2eedb1e12932ca8db0aa	no	32
Warnings:					
Information:					
49	Foreign Reference	WO9915952A2.pdf	4363428 d78bde61a7debaa7089a6376745046ead3696168	no	101
Warnings:					
Information:					
50	Foreign Reference	wO97016935.pdf	1433509 c516a0c067602a327437fcc6c9f2052ce04d0022	no	38
Warnings:					
Information:					
51	Foreign Reference	WO99025152.pdf	1139185 4ba3f2ca162ef889a2c725a60c14bfcf7978d406	no	26
Warnings:					
Information:					
52	NPL Documents	Mona_Ericsson.pdf	56482 8c45881c018039041b7c659900363fe3eec6fd58	no	1

Warnings:					
Information:					
53	Fee Worksheet (PTO-875)	fee-info.pdf	32147 e0fa05b31b2bdcccde7f3037fe6e96570ec1986c	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	89463459	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,575	09/26/2006	Benjamin Firooz Ghassabian	GHASSABIAN12	7464

1444 7590 11/29/2010

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EXAMINER	
LAM, VINH TANG	
ART UNIT	PAPER NUMBER
2629	
MAIL DATE	DELIVERY MODE
11/29/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/553,575	GHASSABIAN, BENJAMIN FIROOZ	
	Examiner	Art Unit	
	VINH LAM	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 September 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-80* is/are pending in the application.

4a) Of the above claim(s) *1-34,42,43,53,55-59 and 67* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *35-41,44-52,54,60-66 and 68-80* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 October 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims **35**-**41**, **44**-**52**, **54**, **60**-**66**, and **68**-**80** are rejected under 35 U.S.C. 103(a) as being unpatentable over **King et al. (US Patent No. 6011554)** in view of **Goren (US Patent No. 7190351).**

Regarding Claim **35**, (Currently Amended) **King et al.** teach a data entry system, comprising:

an input unit (*Col. **6**, Ln. **34**-**35**; Col. **6**, Ln. **28**-**33**, FIG. **1B**, e.g. **56's Left Column***) adapted to receive a plurality of different first input signals (*Col. **6**, Ln. **28**-**33**, FIG. **1B**, e.g. **1, 4,** and **7…***), each associated with a group of symbols (*Col. **6**, Ln. **28**-**33**, FIG. **1B**, e.g. **1, C, Y, K, Ret, Tab, Esc***), and the first input signals are together associated with all the letters of an alphabet of a language (*Col. **6**, Ln. **28**-**33**, FIG. **1B**, i.e. **56***); and

a word predictive system (*Col. **6**, Ln. **17**-**20**, FIG. **1A**, i.e. **50***) adapted to select a single word (*Col. **6**, Ln. **38**-**40**; Col. **20**, Ln. **1**-**6**, FIG. **6**, i.e. **done***) from a word database (*Col. **20**, Ln. **12**-**15**, FIG. **6**, i.e. **76***) responsive to a sequence of first input signals

provided by a user, while selecting for each of the first input signals in the sequence one of the letters out of the group of symbols with which it is associated (*Col. **8**, Ln. **15**-**24**, FIG. **6***).

However, **King et al.** do not teach that the input unit comprises a plurality of keys arranged in two groups, the keys of each group arranged in a respective single column, wherein each group is configured for use by a finger of a different hand of a user.

In the same field of endeavor, **Goren** teaches the input unit (*Col. **21**, Ln. **19**-**33**, FIG. **24B**, i.e. **500***) comprises a plurality of keys arranged in two groups (*Col. **21**, Ln. **19**-**33**, FIG. **24B**, i.e. **504** & **506***), the keys of each group arranged in a respective single column (*Col. **21**, Ln. **19**-**33**, FIG. **24B**, i.e. **504** or **506***), wherein each group is configured for use by a finger of a different hand of a user (*Col. **21**, Ln. **19**-**33**, FIG. **24B**, i.e. **Left** and **Right***), such that a user can touch all the keys of each group (*Col. **21**, Ln. **19**-**33**, FIG. **24B**, i.e. **504** or **506***) concurrently with a single finger (*Col. **5**, Ln. **24**-**54**, e.g. thumb*), in a manner which allows selectively actuating each of the keys by the finger (*Col. **5**, Ln. **24**-**54***).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine **King et al.** teaching of a data entry system comprising plurality of input buttons having word prediction capability with **Goren** teaching of arrangement of input buttons in left and right columns *to provide faster and easier data input*.

Regarding Claim **60**, (Currently Amended) **King et al.** teach a data entry system of a device, comprising:

a screen (*Col. **20**, Ln. **1-4**, FIG. **6**, i.e. **53***); and

a processor (*Col. **6**, Ln. **46-52**, FIG. **2**, i.e. **100***) adapted to display on the screen characters entered through the keys (*Col. **6**, Ln. **46-52**, FIG. **2***),

wherein the plurality of keys (*Col. **6**, Ln. **28-33**, FIG. **1B**, i.e. **56***) associated with all the letters of an alphabet of a language (*Col. **6**, Ln. **28-33**, FIG. **1B**, i.e. **A-Z***).

However, **King et al.** do not teach that the keys are arranged in two groups each on an opposite end of the device, the groups being separated at least partially by a section not containing keys, wherein each group is configured for use by a finger of a different hand of a user.

In the same field of endeavor, **Goren** teaches that the keys are arranged in two groups (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **504** & **506***) each on an opposite end of the device (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **Left** and **Right***), the groups being separated at least partially by a section (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **508***) not containing keys, wherein each group is configured for use by a finger of a different hand of a user (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **Left** and **Right***),

wherein the plurality of keys associated with all the letters of the alphabet are arranged (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **504** or **506***) such that a user can touch all the keys concurrently with two fingers (*Col. **5**, Ln. **24-54**, e.g. thumb*), in a manner which allows selectively actuating each of the keys by one of the two fingers (*Col. **5**, Ln. **24-54***).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine **King et al.** teaching of a data entry system

comprising plurality of input buttons having word prediction capability with **Goren** teaching of arrangement of input buttons in left and right columns *to provide faster and easier data input*.

Regarding Claim **36**, (Previously Presented) the system of claim 35, wherein **King et al.** further teach comprising:

an output unit (*Col. **20**, Ln. **1-4**, FIG. **6**, i.e. **53***) for displaying the selected word (*Col. **20**, Ln. **12-1**, FIG. **6**, e.g. **done***) to a user; and

a second input unit (*Col. **6**, Ln. **34-35**; Col. **6**, Ln. **28-33**, FIG. **1B**, e.g. **56's Left Column***) adapted to receive second input signals corresponding to the letters of the alphabet (*Col. **6**, Ln. **28-33**, FIG. **1B**, e.g. **S, U, I, M, G, N, B, Z...***),

wherein the word predictive system is adapted to select a word for a sequence of first input signals using received second input signals received after displaying a selected word for the sequence of first input signals (*Col. **20**, Ln. **12-1**, FIG. **6**, e.g. **done***).

Regarding Claim **37**, (Previously presented) the system of claim 36, wherein the second input unit is adapted to receive speech signals corresponding to the letters of the alphabet which is well-known in the art as "Speech Recognition".

Regarding Claim **38**, (Previously presented) the system of claim 37, comprising a recognition system which uses the speech signals corresponding to the letters of the alphabet in selecting for first input signals a single letter from the group of symbols associated with the first signal which is well-known in the art of "Speech Recognition".

Regarding Claim **39**, (Previously presented) the system of claim 35, wherein the input unit comprises a single pressure sensitive pad for receiving the first input signals, corresponding with the letters of the alphabet which is well-known in the art as "Hand-writing Recognition".

Regarding Claim **40**, (Previously presented) **King et al.** and **Goren** teach the system of claim 35.

Although **King et al.** and **Goren** do not explicitly teach that the input device comprises four keys, each key being used to generate one of the first input signals, the four keys together associated with all the letters of the alphabet of the language.

However, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to recognize that the total number of keys associated with all the letters of the alphabet would have been an obvious Choice of Design (as shown in **Goren's** *FIGs.* ***1B*** *or* ***9***).

Regarding Claim **41**, (Previously presented) the system of claim 40, wherein **King et al.** teach each of the first input_signals is inputted by a single pressing on a respective one of the four keys (*Col.* ***6****, Ln.* ***33****-****45***).

Regarding Claim **44**, (Previously presented) the system of claim 42, wherein **Goren** teaches the columns are distanced from each other by a distance substantially greater than the widths of the keys (*Col.* ***21****, Ln.* ***19****-****33****, FIG.* ***24B****, i.e.* ***504*** *&* ***506***).

Regarding Claim **45**, (Previously presented) the system of claim 42, wherein **Goren** teaches the columns are located on opposite sides of a screen of the system (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **504** & **506***).

Regarding Claims **46** and **69**, (Previously presented) the system of claims 40 and 60 respectively, wherein **Goren** teaches the keys comprise physical keys (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **504** & **506***).

Regarding Claims **47** and **70**, (Previously presented) the system of claim 40 and 60 respectively, wherein **Goren** teaches the keys comprise virtual keys (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **504** & **506***).

Regarding Claim **48**, (Previously presented) the system of claim 40, wherein **King et al.** teach different interactions with the keys correspond to different signals (*Col. **6**, Ln. **28-33**, FIG. **1B**, e.g. **1, 4,** and **7…***).

Regarding Claim **49**, (Previously presented) the system of claim 48, wherein **King et al.** teach the keys respond to two different types of interactions, a first type of interaction corresponds to respective ones of the first signals and a second type of interaction corresponds to symbols other than those represented by the first signals (*Col. **6**, Ln. **28-33**, FIG. **1B**, e.g. **1, C, Y,** or **K…***).

Regarding Claim **50**, (Previously presented) the system of claim 49, wherein **King et al.** teach the keys are associated with respective ones of the first signals when pressed slightly and with other symbols when pressed heavily (*Col. **6**, Ln. **28-33**, FIG. **1B**, e.g. **1, C, Y,** or **K…***).

Regarding Claim **51**, (Previously presented) the system of claim 35, wherein **King et al.** teach each of the four input signals corresponds to at least six letters (*Col. **6**, Ln. **28-33**, FIG. **1B**, e.g. **4, O, L, X, &, $,** and **%***).

Regarding Claim **52**, (Previously presented) the system of claim 51, wherein **King et al.** teach two of the input signals correspond to six letters (*Col. **6**, Ln. **28-33**, FIG. **1B**, e.g. **C, Y, K, O, L,** and **X***).

Regarding Claim **54**, (Currently Amended) the system of claim 35, wherein the finger of each hand comprises thumb which is obviously, anatomically, and physiologically true for operators of homo sapiens species.

Regarding Claim **61,** (Previously presented) the system of claim 60, wherein **Goren** teaches the plurality of keys are arranged in two groups each on an opposite end of the screen (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **Left** and **Right***).

Regarding Claim **62**, (Previously presented) the system of claim 60, wherein **Goren** teaches the plurality of keys are organized in two columns, one on one end of the device and a second one on an opposite end of the device (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **Left** and **Right***).

Regarding Claim **63**, (Previously presented) the system of claim 60, **Goren** teaches further comprising a pointing device on a side of the device opposite the screen (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **510***).

Regarding Claim **64**, (Previously presented) the system of claim 60, wherein **Goren** teaches at least two of the no more than six keys are located on a right

side of the screen and at least two of the no more than six keys are on a left side of the screen (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **504** & **506***).

Regarding Claim **65**, (Previously presented) the system of claim 64, wherein **King et al.** teach the screen has a larger horizontal axis than vertical axis in its letter display orientation (*FIG. **6***).

Regarding Claim **66**, (Previously presented) the system of claim 60, wherein **Goren** teaches the plurality of keys comprise four keys associated with all the letters of the alphabet (Col. **22**, Ln**. 17-20**, *FIGs. **1B** or **9***).

Regarding Claim **68**, (Previously presented) the system of claim 60, wherein **Goren** teaches the plurality of keys are arranged in two groups of equal numbers of keys (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **504** & **506***).

Regarding Claim **71**, (Previously presented) the system of claim 60, wherein **King et al.** teach each group includes at least one additional key not associated with letters (*FIG. **1B***).

Regarding Claim **72**, (Previously presented) the system of claim 60, wherein **King et al.** teach each group includes exactly four keys on its end of the device (*FIG. **1B**; i.e. including **SHIFT***).

Regarding Claim **73**, (Previously presented) the system of claim 60, wherein each group includes exactly three keys on its end of the device (*Col. **6**, Ln. **34-35**; Col. **6**, Ln. **28-33**, FIG. **1B**, e.g. **56's Left** and **Right Columns***).

Regarding Claim **74**, (Previously presented)) the system of claim 36, wherein **King et al.** teach the word predictive system is adapted to provide a first word

for a sequence of first input signals and to provide a second word different from the first word, for the same sequence of first input signals, responsive to receiving a second input signal (*FIG. **6***).

Regarding Claim **75**, (Previously presented) the system of claim 36, wherein **King et al.** teach the second signals which the second input unit is adapted to receive are not affected by the specific first input signals received (*FIG. **6***).

Regarding Claim **76**, (Currently Amended) the system of claim 36, wherein **King et al.** teach the word predictive system is adapted to select a word for a sequence of first input signals using second input signals received after a cursor is moved from a place it was located at immediately after a corresponding first signal was entered (*Col. **20**, Ln. **12-1**, FIG. **6**, e.g. **done***).

Regarding Claim **77**, (Previously presented) the system of claim 35, wherein **Goren** teaches the plurality of different first input signals comprise four first input signals associated with all the letters of the alphabet (Col. **22**, Ln**. 17-20**, *FIGs. **1B** or **9***).

Regarding Claim **78**, (Previously presented) the system of claim 35, wherein **Goren** teaches both groups include the same number of keys (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **504** & **506***).

Regarding Claim **79**, (Previously presented) the system of claim 35, wherein **Goren** teaches the groups are located on opposite ends of the device (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **504** & **506***).

Regarding Claim **80**, (Previously presented) the system of claim 35, wherein **Goren** teaches the input signals together associated with all the letters of the alphabet are generated by interactions of the fingers with up to six of the keys (Col. **22**, Ln**. 17-20**, *FIGs. **1B** or **9***).

Response to Arguments/Amendments/Remarks

2. Applicant's arguments, see P. 9-10, filed 09/28/2010, with respect to 35 USC § 112 1st and 2nd ¶s have been fully considered and are persuasive. The Rejections under 35 USC § 112 1st and 2nd ¶s have been withdrawn.

Aaa. Applicant's arguments filed 09/28/2010 have been fully considered but they are not persuasive.

First of all concerning Claim 35, applicant argues that the references do not teach "…a plurality of keys arranged in two groups, ... such that a user can touch all the keys of each group concurrently with a single finger, in a manner which allows selectively actuating each of the keys by the finger…". However, the Examiner respectfully disagrees because **Goren** teaches that

the keys are arranged in two groups (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **504** & **506***) each on an opposite end of the device (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **Left** and **Right***), the groups being separated at least partially by a section (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **508***) not containing keys, wherein each group is configured for use by a finger of a different hand of a user (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **Left** and **Right***),

wherein the plurality of keys associated with all the letters of the alphabet are arranged (*Col. **21**, Ln. **19**-**33**, FIG. **24B**, i.e. **504** or **506***) such that a user can touch all the keys concurrently with two fingers (*Col. **5**, Ln. **24**-**54**, e.g. thumb*), in a manner which allows selectively actuating each of the keys by one of the two fingers (*Col. **5**, Ln. **24**-**54***).

Secondly applicant's arguments with respect to claim 53 have been considered but are moot since it is cancelled.

Thirdly concerning Claim 60, applicant argues that the references do not teach "…wherein the plurality of keys associated with all the letters of the alphabet are arranged such that a user can touch all the keys concurrently with two fingers, in a manner which allows selectively actuating each of the keys by one of the two fingers…". However, the Examiner respectfully disagrees because **Goren** teaches that

the plurality of keys associated with all the letters of the alphabet are arranged (*Col. **21**, Ln. **19**-**33**, FIG. **24B**, i.e. **504** or **506***) such that a user can touch all the keys concurrently with two fingers (*Col. **5**, Ln. **24**-**54**, e.g. thumb*), in a manner which allows selectively actuating each of the keys by one of the two fingers (*Col. **5**, Ln. **24**-**54***).

Finally independent claims are properly rejected as shown above.

3. Claims **1**-**34**, **42**-**43**, **53**, **55**-**59**, and **67** are canceled.

Conclusion

The prior art(s) made of record and not relied upon (is)/are considered pertinent to applicant's disclosure: Vale; Peter O. (US Patent/PGPub. No. 6359572).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VINH T. LAM whose telephone number is (571)270-3704. The examiner can normally be reached on M-F (7:00-4:30) EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on (571) 272-7674. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Vinh T Lam/
Examiner, Art Unit 2629

/Amare Mengistu/
Supervisory Patent Examiner, Art Unit 2629

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10553575	GHASSABIAN, BENJAMIN FIROOZ
	Examiner	Art Unit
	VINH T LAM	2629

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	07/30/2008	03/31/2009	11/09/2009	04/16/2010	10/30/2010				
	1	÷	N	-	N	-				
	2	÷	N	-	N	-				
	3	÷	N	-	N	-				
	4	÷	N	-	N	-				
	5	÷	N	-	N	-				
	6	÷	N	-	N	-				
	7	÷	N	-	N	-				
	8	÷	N	-	N	-				
	9	÷	N	-	N	-				
	10	÷	N	-	N	-				
	11	÷	N	-	N	-				
	12	÷	N	-	N	-				
	13	÷	N	-	N	-				
	14	÷	N	-	N	-				
	15	÷	N	-	N	-				
	16	÷	N	-	N	-				
	17	÷	N	-	N	-				
	18	÷	N	-	N	-				
	19	÷	N	-	N	-				
	20	÷	N	-	N	-				
	21	÷	N	-	N	-				
	22	÷	N	-	N	-				
	23	÷	N	-	N	-				
	24	÷	✓	-	N	-				
	25	÷	✓	-	N	-				
	26	÷	✓	-	N	-				
	27	÷	✓	-	N	-				
	28	÷	✓	-	N	-				
	29	÷	✓	-	N	-				
	30	÷	✓	-	N	-				
	31	÷	✓	-	N	-				
	32	÷	✓	-	N	-				
	33		✓	-	N	-				
	34		✓	-	N	-				
	35			N	✓	✓				

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10553575	GHASSABIAN, BENJAMIN FIROOZ
	Examiner	Art Unit
	VINH T LAM	2629

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	07/30/2008	03/31/2009	11/09/2009	04/16/2010	10/30/2010				
	36			N	✓	✓				
	37			N	✓	✓				
	38			N	✓	✓				
	39			N	✓	✓				
	40			N	✓	✓				
	41			N	✓	✓				
	42			N	N	-				
	43			N	N	-				
	44			N	✓	✓				
	45			N	✓	✓				
	46			N	✓	✓				
	47			N	✓	✓				
	48			N	✓	✓				
	49			N	✓	✓				
	50			N	✓	✓				
	51			N	✓	✓				
	52			N	✓	✓				
	53			N	✓	-				
	54			N	✓	✓				
	55			N	✓	-				
	56			N	N	-				
	57			N	N	-				
	58			N	N	-				
	59			N	N	-				
	60			N	✓	✓				
	61			N	✓	✓				
	62			N	✓	✓				
	63			N	✓	✓				
	64			N	✓	✓				
	65			N	✓	✓				
	66			N	✓	✓				
	67			N	✓	-				
	68			N	✓	✓				
	69			N	✓	✓				
	70			N	✓	✓				

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10553575	GHASSABIAN, BENJAMIN FIROOZ
	Examiner	Art Unit
	VINH T LAM	2629

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	07/30/2008	03/31/2009	11/09/2009	04/16/2010	10/30/2010				
	71			N	✓	✓				
	72			N	✓	✓				
	73			N	✓	✓				
	74				✓	✓				
	75				✓	✓				
	76				✓	✓				
	77				✓	✓				
	78				✓	✓				
	79				✓	✓				
	80				✓	✓				

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10553575	GHASSABIAN, BENJAMIN FIROOZ
	Examiner	Art Unit
	VINH T LAM	2629

SEARCHED			
Class	Subclass	Date	Examiner
345	156-172	3/31/2009	Vinh Lam

SEARCH NOTES		
Search Notes	Date	Examiner
Search Inventors. No ODP.	7/30/2008	Vinh Lam
Search Internet for synonyms and technical terms.	3/31/2009	Vinh Lam
Search Class/Subclass with 2629 QEM support.	3/31/2009	Vinh Lam
Search EAST for prior arts.	4/16/2010	Vinh Lam
Review Amendments and Arguments	10/22/2010	Vinh Lam

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

/VINH LAM/ Examiner, Art Unit 2629	

PTO/SB/08a (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	10553575
	Filing Date	2006-09-26
	First Named Inventor	Benjamin Firooz GHASSABIAN
	Art Unit	2629
	Examiner Name	Vinh Tang Lam
	Attorney Docket Number	GHASSABIAN12

U.S.PATENTS						
Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	6885317	B1	2005-04-26	Howard Andrew Gutowitz	
If you wish to add additional U.S. Patent citation information please click the Add button.						

U.S.PATENT APPLICATION PUBLICATIONS						
Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					
If you wish to add additional U.S. Published Application citation information please click the Add button.						

FOREIGN PATENT DOCUMENTS								
Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] ¡	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							☐
If you wish to add additional Foreign Patent Document citation information please click the Add button								

NON-PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	10553575
	Filing Date	2006-09-26
	First Named Inventor	Benjamin Firooz GHASSABIAN
	Art Unit	2629
	Examiner Name	Vinh Tang Lam
	Attorney Docket Number	GHASSABIAN12

	1	European Search Report from corresponding European Application No. 08806962.0 dated November 17, 2010	☐

If you wish to add additional non-patent literature document citation information please click the Add button

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	10553575
	Filing Date	2006-09-26
	First Named Inventor	Benjamin Firooz GHASSABIAN
	Art Unit	2629
	Examiner Name	Vinh Tang Lam
	Attorney Docket Number	GHASSABIAN12

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☒ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Ronni S. Jillions/	Date (YYYY-MM-DD)	2010-12-13
Name/Print	Ronni S. Jillions	Registration Number	31,979

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

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7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	9023393
Application Number:	10553575
International Application Number:	
Confirmation Number:	7464
Title of Invention:	Systems to enhance data entry in mobile and fixed environment
First Named Inventor/Applicant Name:	Benjamin Firooz Ghassabian
Customer Number:	01444
Filer:	Roger Lowen Browdy/Sharnita Davenport
Filer Authorized By:	Roger Lowen Browdy
Attorney Docket Number:	GHASSABIAN12
Receipt Date:	13-DEC-2010
Filing Date:	26-SEP-2006
Time Stamp:	17:12:20
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Filed (SB/08)	2010-12-13IDSSigned.pdf	29739 1d95c93f700dc0a5f264e2cfa9aacc5a6410c3ae	no	4

Warnings:	
Information:	

This is not an USPTO supplied IDS fillable form					
2	NPL Documents	2010-12-02copyofsearchreport.pdf	196210 fa3ef4ca15cff1420e665bee9c2edfc34b946168	no	6
Warnings:					
Information:					
			Total Files Size (in bytes):	225949	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Applicant:	§	
	§	
GHASSABIAN, Benjamin F.	§	Confirmation No.: 7464
	§	
Serial No.:10/553,575	§	Group Art Unit: 2629
	§	
	§	Examiner: Lam, Vinh Tang
Filed: Sept. 26, 2006	§	
	§	
For: SYSTEM TO ENHANCE DATA ENTRY IN MOBILE AND FIXED ENVIRONMENT	§	Attorney Docket: 4979/23
	§	
	§	

Commissioner for Patents
PO Box 1450
Alexandria, Virginia 22313-1450

AMENDMENT

Sir:

In response to the non-final Office Action dated 29 November 2010 for the above-identified patent application, please consider Applicant's response and amend the above-identified application as follows:

AMENDMENTS TO THE CLAIMS

1-34. (Cancelled)

35. (Currently amended) A data entry system, comprising:

an input unit adapted to receive a plurality of ~~different~~ first input signals, ~~each associated with a group of symbols, and~~ wherein at least some of the first input signals are together associated with substantially all the letters of ~~an alphabet of~~ a language such that at least one of the first input signals is associated with more than one letter; and

a word predictive system adapted to select a ~~single~~ word from a word database responsive to a sequence of first input signals provided by a user, ~~while selecting for each of the first input signals in the sequence one of the letters out of the group of symbols with which it is associated,~~

wherein the input unit comprises a plurality of keys representing the first input signals to which the letters are assigned, said keys being arranged in two groups, ~~the keys of each group arranged in a respective single column,~~ wherein each group is configured for use by a different finger of ~~a different hand of a~~ the user~~, such that a user can touch all the keys of each group concurrently with a single finger, in a manner which allows selectively actuating each of the keys by the finger~~.

36. (Currently amended) The system of claim 35, comprising:

an output unit for displaying the selected word to a user; and

a second input unit adapted to receive second input signals corresponding to the letters of the language,

Samsung Exhibit 1006, Page 870 of 1063

wherein the word predictive system is adapted to select a word for a sequence of first input signals by using received second input signals ~~received after displaying a selected word for the sequence of first input signals~~.

37. (Currently amended) The system of claim 36, wherein the second input unit is adapted to receive speech signals corresponding to the letters of the language ~~alphabet~~.

38. (Previously presented) The system of claim 37, comprising a recognition system which uses the speech signals corresponding to the letters of the alphabet in selecting for first input signals a single letter from the group of symbols associated with the first signal..

39. (Currently amended) The system of claim 35, wherein the ~~input unit comprises a single pressure sensitive pad for receiving the first input signals, corresponding with the letters of the alphabet~~ two groups of keys are located on opposite sides of a device.

40. (Currently amended) The system of claim 35, wherein the data entry system~~input device~~ comprises four keys, each key being used to generate one of the first input signals, the four keys together being associated with substantially all the letters of the ~~alphabet of the~~ language.

41. (Currently amended) The system of claim 40, wherein the keys of each group are arranged so as to form two columns of keys ~~each of the first input signals is inputted by a single pressing on a respective one of the four keys~~.

42-43. (Cancelled)

44. (Currently amended) The system of claim 42, wherein the ~~columns are distanced from each other by a distance substantially greater than the widths of the keys~~ at least some of the first input signals are together associated with all the letters of the language.

45. (Currently amended) The system of claim 3542, wherein the two groups of keys ~~columns~~ are located on opposite sides of a screen associated with~~of~~ the system.

46. (Currently amended) The system of claim 40, wherein the keys comprise at least one of virtual keys and physical keys.

47. (Cancelled)

48. (Previously presented) The system of claim 40, wherein different interactions with the keys correspond to different signals.

49. (Previously presented) The system of claim 48, wherein the keys respond to two different types of interactions, a first type of interaction corresponds to respective ones of the first signals and a second type of interaction corresponds to symbols other than those represented by the first signals.

50. (Previously presented) The system of claim 49, wherein the keys are associated with respective ones of the first signals when pressed slightly and with other symbols when pressed heavily.

51. (Cancelled)

52. (Currently amended) The system of claim 3551, wherein the letters of the language are assigned ~~two of the input signals correspond~~ to six keys~~letters~~.

53. (Cancelled)

54. (Currently amended) The system of claim 3540, wherein ~~the finger of each hand comprises a thumb~~the letter keys of each group are arranged so as to form two columns of keys.

55. (Cancelled)

56-59. (Cancelled)

60.-80. (Cancelled)

81. (New) The system of claim 40, wherein the letter keys of each group are arranged so as to form two rows of keys.

REMARKS

Claims 35-41, 44-46, 48-50, 52, 54 and 81 are pending. New claim 81 has been added. Claims 35-37, 39-41, 44-46, 52 and 54 have been amended. Claims 1-34, 42-43, 47, 51, 53, 55-80 have been cancelled.

The examiner rejected claims 35-41, 44-52, 54, 60-66 and 68-80 as unpatentable over U.S. Patent No. 6011554 to King in view of U.S. Patent No. 7190351 to Goren.

Although Applicant traverses the examiner's rejection, Applicant has amended the independent claim 35 to advance prosecution and has canceled independent claim 60.

Claim 35 has been amended to make the claim clearer and remove unnecessary language. For example, claim 35 has been amended to delete "different" from "first input signals and to delete reference to "a group of symbols" separate from "first input signals". In addition the word" substantially" has been added in claim 35 before "all the letters" This amendment is supported in the Specification including in paragraph "0715" where "substantially all of the letters" is referred to. Claim 40 has been amended to insert "substantially" in order to conform to this amendment to claim 35.

In addition, the term "alphabet" has been deleted and dependent claim 37 has been amended to conform to this amendment. A further amendment has been made reciting inserting after "wherein the input unit comprises a plurality of keys" the phrase "representing the first input signals to which the letters are assigned, said keys being". This is supported throughout the Specification including in paragraphs 0603-0605 discussing the keys representing the input signals of the input unit to which letters are assigned. Claim 35 has also been amended to recite "such that at least one of the first input signals is associated with more than one letter". The Specification and the drawings is replete with references to keys showing multiple letters.

Further, claim 35 has been amended to delete "the keys of each group arranged in a respective single column". Instead, claim 39 has been amended to recite "two groups of keys are located on opposite sides of a device". Claim 41 has also been amended to recite "the keys of each group are arranged so as to form two columns of keys". Similarly, claim 54 recites "letter keys of each group are arranged so as to form two columns of keys" These amendments are supported in the Specification and drawings including paragraph 0621-0622 and at FIG. 51.

Claim 44 has been amended to recite "all the letters" as claim 35 was before the amendment herein. This is supported in the Specification including at FIG. 45C. Claim 45 has been clarified to refer to groups instead of columns. Claim 46 has been amended to recite "virtual keys", which is supported in the Specification including at paragraphs 0546, 0655, 0687, and 0731. Claim 52 has been amended to change "two of the input signals" to "the letters of the language". New claim 81 recites "letter keys of each group are arranged so as to form two rows of keys". This is supported in the Specification including at paragraph 0698 and FIG. 62a

Amended independent claim 35 is distinguishable over King and Goren. Neither King nor Goren combine a word predictive system with two groups of letter keys, at least one of the keys associated with multiple letters, the keys together comprising substantially all letters of the alphabet, the keys available and actuatable at a given time to trigger the word predictive system and thereby permit blind typing by two fingers, one of each hand.

FIG. 24B and column 21 lines 19-33 of Goren cited by the examiner discloses two columns of keys one of which Goren calls control buttons 504 and the other of which Goren calls secondary selection mechanism 506 or key selection mechanism 506. In contrast to the claimed invention, the user cannot select at any given time all letters of the alphabet. Instead, the user initially can only select the control buttons 504 which are vowels or some other useful subset of letters. Second, the secondary selection keys 506 are not letters but rather function

keys that are replaced by letters once a control key is selected. Goren, at columns 23-24 and thereafter provide an example of this.

In contrast to claim 35, therefore, Goren does not teach two separate groups of keys where the keys comprise letters. Goren also does not teach two separate groups of keys where at least some of the keys comprise groups of letters on each key. Moreover, Goren also does not teach two separate groups of keys spanning substantially the entire alphabet so that the user can actuate substantially any letter of the alphabet at any given time.

In addition, by assigning several letters to at least one of the first input signals, which are represented by keys having letters ("letter keys"), and dividing those letter keys into two groups of keys, applicant reduces the number of letter keys that include substantially all of the letters of a language, and by using a word predictive data entry system, applicant permits an extremely fast blind typing system

It would not be obvious to use any combination of the prior art to yield Applicant's data entry system which allows fast, blind typing for inexperienced typists. Many different data entry systems have been developed, yet none of them achieve the easy and convenient result of fast, blind typing for even inexperienced typists, as Applicant's claimed invention does.

Furthermore, since in Goren the keys do not even have associated therewith multiple letters, it would be unreasonable to combine the single-letter-per-key data entry unit of Goren with the word predictive multiple-letter-per-key data entry system of King, where multiple letters per key necessitates disambiguation. While it may be obvious to *try* to provide faster and easier data input, Goren teaches a completely different way of doing so. In Goren, actuation of a control key (for example A, E, I O, U) representing as single letter triggers presentation on the screen of secondary selection keys showing other individual letters. It is not a word predictive system as in King and it is not "adapted to select a word from a word database responsive to a sequence of first input signals" as in claim 35. Combining Goren's

"control key and secondary selection key" system with the word predictive system of King would be incongruous because they are completely different solutions. Even if one somehow did make such a combination, which would be make no sense, it would still not meet the claim limitations of independent claim 35.

For the foregoing reasons, it is respectfully submitted that claims 35-41, 44-46, 48-50, 52, 54 and 81 are distinguishable over the prior art and are now in condition for allowance. The favorable consideration and allowance of claims 35-41, 44-46, 48-50, 52, 54 and 81 is respectfully requested.

Respectfully submitted,

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Email: patents@friedpat.com

Dated: May 29, 2011

Electronic Patent Application Fee Transmittal	
Application Number:	10553575
Filing Date:	26-Sep-2006
Title of Invention:	Systems to enhance data entry in mobile and fixed environment
First Named Inventor/Applicant Name:	Benjamin Firooz Ghassabian
Filer:	Mark Friedman
Attorney Docket Number:	GHASSABIAN12
Filed as Small Entity	

U.S. National Stage under 35 USC 371 Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 3 months with $0 paid	2253	1	555	555

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
		Total in USD ($)		**555**

Electronic Acknowledgement Receipt	
EFS ID:	10190039
Application Number:	10553575
International Application Number:	
Confirmation Number:	7464
Title of Invention:	Systems to enhance data entry in mobile and fixed environment
First Named Inventor/Applicant Name:	Benjamin Firooz Ghassabian
Customer Number:	01444
Filer:	Mark Friedman
Filer Authorized By:	
Attorney Docket Number:	GHASSABIAN12
Receipt Date:	29-MAY-2011
Filing Date:	26-SEP-2006
Time Stamp:	08:23:44
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$555
RAM confirmation Number	6083
Deposit Account	062140
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Amendment/Req. Reconsideration-After Non-Final Reject	20110528072833390.pdf	401322 b9f38aae94df35ead431e6b210a80b042cf58d89	no	9
Warnings:					
Information:					
2	Fee Worksheet (PTO-875)	fee-info.pdf	29774 89eaf1af4d59dbc4b69b9a11b97345613fa716aa	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	431096		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
10/553,575	09/26/2006	

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)	SMALL ENTITY ☒ RATE ($)	SMALL ENTITY ☒ FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY FEE ($)
FOR	NUMBER FILED	NUMBER EXTRA					
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
			TOTAL			TOTAL	

* If the difference in column 1 is less than zero, enter "0" in column 2.

APPLICATION AS AMENDED – PART II

AMENDMENT 05/29/2011

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 16	Minus	** 40	= 0	X $26 =	0	OR	X $ =	
Independent (37 CFR 1.16(h))	* 1	Minus	***5	= 0	X $110 =	0	OR	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))									
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE	0	OR	TOTAL ADD'L FEE	

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)	OR	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))									
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/DOROTHY BELL/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/SB/81 (01-09)
Approved for use through 11/30/2011. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

POWER OF ATTORNEY OR REVOCATION OF POWER OF ATTORNEY WITH A NEW POWER OF ATTORNEY AND CHANGE OF CORRESPONDENCE ADDRESS

Application Number	10553575
Filing Date	April 19, 2004
First Named Inventor	Benjamin Firooz GHASSABIAN
Title	Systems to enhance data entry
Art Unit	2629
Examiner Name	Vinh Tang LAM
Attorney Docket Number	4979/23

I hereby revoke all previous powers of attorney given in the above-identified application.

☐ A Power of Attorney is submitted herewith.

OR

☒ I hereby appoint Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith: **44696**

OR

☐ I hereby appoint Practitioner(s) named below as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith:

Practitioner(s) Name	Registration Number

Please recognize or change the correspondence address for the above-identified application to:

☐ The address associated with the above-mentioned Customer Number.

OR

☒ The address associated with Customer Number: **44696**

OR

☐ Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

I am the:

☒ Applicant/Inventor.

OR

☐ Assignee of record of the entire interest. See 37 CFR 3.71.
Statement under 37 CFR 3.73(b) (Form PTO/SB/96) submitted herewith or filed on _____

SIGNATURE of Applicant or Assignee of Record

Signature	X	Date	June 1, 2011
Name	Benjamin Firooz GHASSABIAN	Telephone	
Title and Company			

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☐ *Total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Acknowledgement Receipt

EFS ID:	10202757
Application Number:	10553575
International Application Number:	
Confirmation Number:	7464
Title of Invention:	Systems to enhance data entry in mobile and fixed environment
First Named Inventor/Applicant Name:	Benjamin Firooz Ghassabian
Customer Number:	01444
Filer:	Mark Friedman
Filer Authorized By:	
Attorney Docket Number:	GHASSABIAN12
Receipt Date:	01-JUN-2011
Filing Date:	26-SEP-2006
Time Stamp:	07:17:57
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	20110531062550217.pdf	84871 d966ca1159c8f8e569189f90db472da1a7ea8131	no	1
Warnings:					
Information:					

Total Files Size (in bytes):	84871

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
10/553,575	09/26/2006	Benjamin Firooz Ghassabian	4979/23

CONFIRMATION NO. 7464

44696
DR. MARK M. FRIEDMAN
Moshe Aviv Tower, 54th Floor, 7 Jabotinsky St.
Ramat Gan, 52520
ISRAEL

POA ACCEPTANCE LETTER

OC000000048068421

Date Mailed: 06/10/2011

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/01/2011.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/sleutchit/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
10/553,575	09/26/2006	Benjamin Firooz Ghassabian	GHASSABIAN12

CONFIRMATION NO. 7464

1444
Browdy and Neimark, PLLC
1625 K Street, N.W.
Suite 1100
Washington, DC 20006

POWER OF ATTORNEY NOTICE

OC000000048068402

Date Mailed: 06/10/2011

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/01/2011.

- The Power of Attorney to you in this application has been revoked by the applicant. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

/sleutchit/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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Address: COMMISSIONER FOR PATENTS
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,575	09/26/2006	Benjamin Firooz Ghassabian	4979/23	7464

44696 7590 08/02/2011

DR. MARK M. FRIEDMAN
Moshe Aviv Tower, 54th Floor, 7 Jabotinsky St.
Ramat Gan, 52520
ISRAEL

EXAMINER	
LAM, VINH TANG	

ART UNIT	PAPER NUMBER
2629	

NOTIFICATION DATE	DELIVERY MODE
08/02/2011	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patents@friedpat.com
friedpat.uspto@gmail.com
nomi_m@friedpat.com

Office Action Summary	Application No.	Applicant(s)	
	10/553,575	GHASSABIAN, BENJAMIN FIROOZ	
	Examiner	Art Unit	
	VINH LAM	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 May 2011*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-81* is/are pending in the application.

4a) Of the above claim(s) *1-34,42,43,47,51,53 and 55-80* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *35-41,44-46,48-50,52,54 and 81* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 October 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/13/2010*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim **44** objected to because of the following informalities: Typographical error.

"…the system of claim **42**…" should be "…the system of claim **35**…"

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims **35**-**41**, **44**-**52**, **54**, **60**-**66**, and **68**-**80** are rejected under 35 U.S.C. 103(a) as being unpatentable over **King et al. (US Patent No. 6011554)** in view of **Goren (US Patent No. 7190351).**

Regarding Claim **35**, (Currently amended) **King et al.** teach a data entry system, comprising:

an input unit *(Col. **6**, Ln. **16**-**35**, FIG. **1A**, i.e. **50**)* adapted to receive a plurality of first input signals *(Col. **6**, Ln. **16**-**35**, FIG. **1B**, i.e. signals from left two rows of keys **56**)*, wherein at least some of the first input signals *(Col. **6**, Ln. **16**-**35**, FIG. **1B**, i.e. signals from left two rows of keys **56**)* are together associated with substantially all the letters

*(Col. **6**, Ln. **16-35**, FIG. **1B**, i.e. keys **56** which include letter groups **RPQ, ADF, OLX, EWV,CYK,** and **THJ**)* of a language *(Col. **6**, Ln. **16-35**, FIG. **1B**, i.e. English letters)* such that at least one *(Col. **6**, Ln. **16-35**, FIG. **1B**, i.e. one of keys **56**)* of the first input signals is associated with more than one letter *(Col. **6**, Ln. **16-35**, FIG. **1B**, i.e. top row and left most key which includes at least **RPQ**)*; and

a word predictive system *(Col. **6**, Ln. **17-45**, FIGs. **1A & 1B**, i.e. keyboard disambiguating system **50**)* adapted to select a word *(Col. **7**, Ln. **19-42**; Col. **20**, Ln. **1-6**, FIG. **6**, i.e. **done**)* from a word database *(Col. **7**, Ln. **19-42**, FIG. **6**, i.e. selection list **76**)* responsive to a sequence *(Col. **7**, Ln. **19-42**, i.e. **ADF, OLX, NBZ**, and **EWV**)* of first input signals provided by a user*(Col. **8**, Ln. **15-24**, FIG. **6**)*,

wherein the input unit comprises a plurality of keys representing the first input signals to which the letters are assigned *(Col. **6**, Ln. **16-35**, FIG. **1B**, i.e. keys **56**).*

However, **King et al.** do not teach that said keys being arranged in two groups, wherein each group is configured for use by a different finger of the user.

In the same field of endeavor, **Goren** teaches said keys being arranged in two groups (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **504** & **506***), wherein each group is configured for use by a different finger of the user (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **Left** and **Right***).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine **King et al.** teaching of a data entry system comprising plurality of input buttons having word prediction capability with **Goren**

teaching of arrangement of input buttons in left and right columns *to provide faster and easier data input*.

Regarding Claim **36**, (Currently amended) the system of claim 35, **King et al.** teach comprising:

an output unit *(Col. **20**, Ln. **1-4**, FIG. **6**, i.e. display **53**)* for displaying the selected word *(Col. **20**, Ln. **12-1**, FIG. **6**, e.g. **done**)* to a user; and

a second input unit *(Col. **6**, Ln. **16-35**, FIG. **1B**, i.e. right row of keys **56**)* adapted to receive second input signals *(Col. **6**, Ln. **16-35**, FIG. **1B**, i.e. signals from right row of keys **56**)* corresponding to the letters of the language *(Col. **6**, Ln. **16-35**, FIG. **1B**, i.e. keys **56** which include letter groups **NBZ, IMG,** and **SU**)*,

wherein the word predictive system is adapted to select a word *(Col. **20**, Ln. **12-1**, FIG. **6**, e.g. **done**)* for a sequence of first input signals *(Col. **7**, Ln. **19-42**, i.e. **ADF** and **OLX**)* by using received second input signals *(Col. **7**, Ln. **19-42**, i.e. **NBZ**)*.

Regarding Claim **37**, (Currently amended) the system of claim 36, wherein the second input unit is adapted to receive speech signals corresponding to the letters of the language which is well-known in the art as “Speech Recognition”.

Regarding Claim **38**, (Previously presented) the system of claim 37, comprising a recognition system which uses the speech signals corresponding to the letters of the alphabet in selecting for first input signals a single letter from the group of symbols associated with the first signal which is well-known in the art of “Speech Recognition”.

Regarding Claim **39**, (Currently amended) the system of claim 35, wherein **Goren** teaches the two groups of keys are located on opposite sides of a device (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **504** & **506***).

Regarding Claim **40**, (Currently amended) **King et al.** and **Goren** teach the system of claim 35.

Although **King et al.** and **Goren** do not explicitly teach that the data entry system comprises four keys, each key being used to generate one of the first input signals, the four keys together being associated with substantially all the letters of the language.

However, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to recognize that each key being used to generate one of the first input signals, the four keys together being associated with substantially all the letters of the language would have been an obvious Choice of Design (as suggested by **King et al.** FIG. **1B or 9**).

Regarding Claim **41**, (Currently amended) the system of claim 40, wherein **Goren** teaches the keys of each group are arranged so as to form two columns of keys (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **504** & **506***).

Regarding Claim **44**, (Currently amended) the system of claim 42, wherein **King et al.** teach at least some of the first input signals are together associated with all the letters of the language.

Although **King et al.** and **Goren** do not explicitly teach that the at least some of the first input signals are together associated with all the letters of the language.

However, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to recognize that at least some of the first input signals are together associated with all the letters of the language would have been an obvious Choice of Design (as suggested by **King et al.** FIG. **1B or 9**).

Regarding Claim **45**, (Currently amended) the system of claim 35, wherein **Goren** teaches the two groups of keys are located on opposite sides of a screen associated with the system (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **504** & **506***).

Regarding Claim **46**, (Currently amended) the system of claim 40, wherein **King et al.** teach the keys comprise at least one of virtual keys and physical keys *(Col. **6**, Ln. **16-35**, FIG. **1A**)*.

Regarding Claim **48**, (Previously presented) the system of claim 40, wherein **King et al.** teach different interactions with the keys correspond to different signals (*Col. **6**, Ln. **28-33**, FIG. **1B**, e.g. **1, 4,** and **7…***).

Regarding Claim **49**, (Previously presented) the system of claim 48, wherein **King et al.** teach the keys respond to two different types of interactions, a first type of interaction corresponds to respective ones of the first signals and a second type of interaction corresponds to symbols other than those represented by the first signals (*Col. **6**, Ln. **28-33**, FIG. **1B**, e.g. **1, C, Y,** or **K…***).

Regarding Claim **50**, (Previously presented) the system of claim 49, wherein **King et al.** teach the keys are associated with respective ones of the first signals when pressed slightly and with other symbols when pressed heavily (*Col. **6**, Ln. **28-33**, FIG. **1B**, e.g. **1, C, Y,** or **K…***).

Regarding Claim **52**, (Currently amended) the system of claim 35 , wherein **King et al.** teach the letters of the language are assigned *(Col. **6**, Ln. **16-35**, FIG. **1B**, i.e. keys **56** which include letter groups **RPQ, ADF, OLX, EWV,CYK,** and **THJ**)*.

Regarding Claim **54**, (Currently amended) the system of claim 40, wherein **Goren** teaches the letter keys of each group are arranged so as to form two columns of keys (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **504** & **506***).

Regarding Claim **81**, (New) the system of claim 40, wherein **Goren** teaches the letter keys of each group are arranged so as to form two rows of keys (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **504** & **506***).

Response to Arguments/Amendments/Remarks

3. Claims **1-34**, **42-43**, **47**, **51**, **53**, **55**, **56-59**, and **60-80** are cancelled.

4. Applicant's arguments filed 05/29/2011 have been fully considered but they are not persuasive.

First of all on Pages 7-8, applicant argues that "**Goren** does not teach two separate groups of keys where the keys comprise letters. **Goren** also does not teach two separate groups of keys where at least some of the keys comprise groups of letters on each key. Moreover, **Goren** also does not teach two separate groups of keys spanning substantially the entire alphabet so that the user can actuate substantially any

letter of the alphabet at any given time.". The Examiner respectfully agrees because it is *not* Goren who teaches the above limitations, it *is* **King et al.** teach those limitations.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Secondly on Page 9, applicant argues that combination of **King et al.** and **Goren** would make no sense. However, the Examiner respectfully disagrees because both of the references are in the same field of endeavor concerning input device. ***King et al.*** *teach all of Claim 35's limitations except the* ***arrangement*** *of the keys into two groups for use with user's hands.* ***Goren*** *clearly suggests that the keys would have been arranged into two groups for use with user's hands*. The *combination* of **King et al.** and **Goren** teach are readable on the entire Claim 35's limitation. The *combination* does not mean that the each and every structures/steps of entire **Goren** teaching is integrated into **King et al.** system, however.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VINH T. LAM whose telephone number is (571)270-3704. The examiner can normally be reached on M-F (7:00-4:30) EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on (571) 272-7674. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Vinh T Lam/
Examiner, Art Unit 2629

/Amare Mengistu/
Supervisory Patent Examiner, Art Unit 2629

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10553575	GHASSABIAN, BENJAMIN FIROOZ
	Examiner	Art Unit
	VINH T LAM	2629

SEARCHED			
Class	Subclass	Date	Examiner
345	156-172	3/31/2009	Vinh Lam

SEARCH NOTES		
Search Notes	Date	Examiner
Search Inventors. No ODP.	7/30/2008	Vinh Lam
Search Internet for synonyms and technical terms.	3/31/2009	Vinh Lam
Search Class/Subclass with 2629 QEM support.	3/31/2009	Vinh Lam
Search EAST for prior arts.	4/16/2010	Vinh Lam
Review Amendments and Arguments	7/6/2011	Vinh Lam

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

/VINH LAM/ Examiner, Art Unit 2629	

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10553575	GHASSABIAN, BENJAMIN FIROOZ
	Examiner	Art Unit
	VINH T LAM	2629

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	07/30/2008	03/31/2009	11/09/2009	04/16/2010	10/30/2010	07/06/2011			
	1	÷	N	-	N	-	-			
	2	÷	N	-	N	-	-			
	3	÷	N	-	N	-	-			
	4	÷	N	-	N	-	-			
	5	÷	N	-	N	-	-			
	6	÷	N	-	N	-	-			
	7	÷	N	-	N	-	-			
	8	÷	N	-	N	-	-			
	9	÷	N	-	N	-	-			
	10	÷	N	-	N	-	-			
	11	÷	N	-	N	-	-			
	12	÷	N	-	N	-	-			
	13	÷	N	-	N	-	-			
	14	÷	N	-	N	-	-			
	15	÷	N	-	N	-	-			
	16	÷	N	-	N	-	-			
	17	÷	N	-	N	-	-			
	18	÷	N	-	N	-	-			
	19	÷	N	-	N	-	-			
	20	÷	N	-	N	-	-			
	21	÷	N	-	N	-	-			
	22	÷	N	-	N	-	-			
	23	÷	N	-	N	-	-			
	24	÷	✓	-	N	-	-			
	25	÷	✓	-	N	-	-			
	26	÷	✓	-	N	-	-			
	27	÷	✓	-	N	-	-			
	28	÷	✓	-	N	-	-			
	29	÷	✓	-	N	-	-			
	30	÷	✓	-	N	-	-			
	31	÷	✓	-	N	-	-			
	32	÷	✓	-	N	-	-			
	33		✓	-	N	-	-			
	34		✓	-	N	-	-			
	35			N	✓	✓	✓			

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10553575	GHASSABIAN, BENJAMIN FIROOZ
	Examiner	Art Unit
	VINH T LAM	2629

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	07/30/2008	03/31/2009	11/09/2009	04/16/2010	10/30/2010	07/06/2011			
	36			N	✓	✓	✓			
	37			N	✓	✓	✓			
	38			N	✓	✓	✓			
	39			N	✓	✓	✓			
	40			N	✓	✓	✓			
	41			N	✓	✓	✓			
	42			N	N	-	-			
	43			N	N	-	-			
	44			N	✓	✓	✓			
	45			N	✓	✓	✓			
	46			N	✓	✓	✓			
	47			N	✓	✓	-			
	48			N	✓	✓	✓			
	49			N	✓	✓	✓			
	50			N	✓	✓	✓			
	51			N	✓	✓	-			
	52			N	✓	✓	✓			
	53			N	✓	-	-			
	54			N	✓	✓	✓			
	55			N	✓	-	-			
	56			N	N	-	-			
	57			N	N	-	-			
	58			N	N	-	-			
	59			N	N	-	-			
	60			N	✓	✓	-			
	61			N	✓	✓	-			
	62			N	✓	✓	-			
	63			N	✓	✓	-			
	64			N	✓	✓	-			
	65			N	✓	✓	-			
	66			N	✓	✓	-			
	67			N	✓	-	-			
	68			N	✓	✓	-			
	69			N	✓	✓	-			
	70			N	✓	✓	-			

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
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	Examiner	Art Unit
	VINH T LAM	2629

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	07/30/2008	03/31/2009	11/09/2009	04/16/2010	10/30/2010	07/06/2011			
	71			N	✓	✓	-			
	72			N	✓	✓	-			
	73			N	✓	✓	-			
	74				✓	✓	-			
	75				✓	✓	-			
	76				✓	✓	-			
	77				✓	✓	-			
	78				✓	✓	-			
	79				✓	✓	-			
	80				✓	✓	-			
	81						✓			

PTO/SB/08a (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	10553575
	Filing Date	2006-09-26
	First Named Inventor	Benjamin Firooz GHASSABIAN
	Art Unit	2629
	Examiner Name	Vinh Tang Lam
	Attorney Docket Number	GHASSABIAN12

U.S.PATENTS						
Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
/V.L./	1	6885317	B1	2005-04-26	Howard Andrew Gutowitz	
If you wish to add additional U.S. Patent citation information please click the Add button.						

U.S.PATENT APPLICATION PUBLICATIONS						
Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					
If you wish to add additional U.S. Published Application citation information please click the Add button.						

FOREIGN PATENT DOCUMENTS								
Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] ¡	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							☐
If you wish to add additional Foreign Patent Document citation information please click the Add button								

NON-PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

Receipt date: 12/13/2010	Application Number	10553575 10553575 - GAU: 2629
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**	Filing Date	2006-09-26
	First Named Inventor	Benjamin Firooz GHASSABIAN
	Art Unit	2629
	Examiner Name	Vinh Tang Lam
	Attorney Docket Number	GHASSABIAN12

/V.L./	1	European Search Report from corresponding European Application No. 08806962.0 dated November 17, 2010	☐

If you wish to add additional non-patent literature document citation information please click the Add button

EXAMINER SIGNATURE

Examiner Signature	/Vinh Lam/	Date Considered	07/06/2011

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

PTO/SB/81 (01-09)
Approved for use through 11/30/2011. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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POWER OF ATTORNEY OR REVOCATION OF POWER OF ATTORNEY WITH A NEW POWER OF ATTORNEY AND CHANGE OF CORRESPONDENCE ADDRESS

Application Number	10/553575
Filing Date	September 26, 2006
First Named Inventor	Benjamin Firooz Ghassabian
Title	SYSTEM TO ENHANCE DATA ENTRY IN MOBILE AND FIXED ENVIRONMENT
Art Unit	2629
Examiner Name	Vinh Tang Lam
Attorney Docket Number	2104-25GHA-US

I hereby revoke all previous powers of attorney given in the above-identified application.

☐ A Power of Attorney is submitted herewith.

OR

☒ I hereby appoint Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith: **32964**

OR

☒ I hereby appoint Practitioner(s) named below as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith:

Practitioner(s) Name	Registration Number
David Klein	41118

Please recognize or change the correspondence address for the above-identified application to:

☐ The address associated with the above-mentioned Customer Number.

OR

☒ The address associated with Customer Number: **32964**

OR

☒ Firm or Individual Name	Dekel Patent Ltd				
Address	18 Menuha VeNahala Street				
City	Rehovot	State		Zip	76209
Country	Israel				
Telephone	+972-8-9495334	Email	dekelltd@netvision.net.il		

I am the:

☒ Applicant/Inventor.

OR

☐ Assignee of record of the entire interest. See 37 CFR 3.71.
Statement under 37 CFR 3.73(b) (Form PTO/SB/96) submitted herewith or filed on _____.

SIGNATURE of Applicant or Assignee of Record

Signature		Date	6 September 2011
Name	Benjamin Firooz Ghassabian	Telephone	011-972-2-644-9001
Title and Company	CEO, Keyless Systems Ltd.		

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☐ *Total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Acknowledgement Receipt	
EFS ID:	10880148
Application Number:	10553575
International Application Number:	
Confirmation Number:	7464
Title of Invention:	Systems to enhance data entry in mobile and fixed environment
First Named Inventor/Applicant Name:	Benjamin Firooz Ghassabian
Customer Number:	44696
Filer:	David L. Klein
Filer Authorized By:	
Attorney Docket Number:	4979/23
Receipt Date:	06-SEP-2011
Filing Date:	26-SEP-2006
Time Stamp:	12:15:06
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	Revoc_POA.pdf	3043692 18f91dcd55b3d0d39613a37fac4e47b003bed9b1	no	1

Warnings:
Information:

Total Files Size (in bytes):	3043692

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,575	09/26/2006	Benjamin Firooz Ghassabian	2104-25GHA-US	7464

32964 7590 09/14/2011

DEKEL PATENT LTD., DAVID KLEIN
BEIT HAROF'IM
18 MENUHA VENAHALA STREET, ROOM 27
REHOVOT, 76209
ISRAEL

EXAMINER	
LAM, VINH TANG	
ART UNIT	**PAPER NUMBER**
2629	

MAIL DATE	DELIVERY MODE
09/14/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Applicant-Initiated Interview Summary	**Application No.** 10/553,575	**Applicant(s)** GHASSABIAN, BENJAMIN FIROOZ	
	Examiner VINH LAM	**Art Unit** 2629	

All participants (applicant, applicant's representative, PTO personnel):

(1) *VINH LAM*. (3)_____.

(2) *David Klein*. (4)_____.

Date of Interview: *08 September 2011*.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☐112 ☐102 ☒103 ☐Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *35*.

Identification of prior art discussed: *King; Martin T. et al.(US 6011554) & Goren; Michael (US 7190351)*.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

Agreements:
1. Applicant argues limitations not claimed;
2. References do not teach input device with "2 groups" and "four keys"
3. RCE with amendment to claim specific limitations as disclosed by the orginal specification.

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/VINH LAM/ Examiner, Art Unit 2629	

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record
A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews
Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.
All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:
- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:
1) A brief description of the nature of any exhibit shown or any demonstration conducted,
2) an identification of the claims discussed,
3) an identification of the specific prior art discussed,
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
5) a brief identification of the general thrust of the principal arguments presented to the examiner,
   (The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
10/553,575	09/26/2006	Benjamin Firooz Ghassabian	2104-25GHA-US

CONFIRMATION NO. 7464

POA ACCEPTANCE LETTER

32964
DEKEL PATENT LTD., DAVID KLEIN
BEIT HAROF'IM
18 MENUHA VENAHALA STREET, ROOM 27
REHOVOT, 76209
ISRAEL

OC000000049776431

Date Mailed: 09/15/2011

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 09/06/2011.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/mnguyen/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

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www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
10/553,575	09/26/2006	Benjamin Firooz Ghassabian	4979/23

CONFIRMATION NO. 7464

44696
DR. MARK M. FRIEDMAN
Moshe Aviv Tower, 54th Floor, 7 Jabotinsky St.
Ramat Gan, 52520
ISRAEL

POWER OF ATTORNEY NOTICE

OC000000049776429

Date Mailed: 09/15/2011

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 09/06/2011.

- The Power of Attorney to you in this application has been revoked by the applicant. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

/mnguyen/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

PTO/SB/30EFS (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	10553575	Filing Date	2006-09-26	Docket Number (if applicable)	2104-25GHA-US	Art Unit	2629
First Named Inventor	Benjamin F. Ghassabian			Examiner Name	Vinh Tang Lam		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

- ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- ☐ Other _____

☒ Enclosed

- ☒ Amendment/Reply
- ☐ Information Disclosure Statement (IDS)
- ☐ Affidavit(s)/ Declaration(s)
- ☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____ (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☐ **The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.**
The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No _____

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

☐ Applicant Signature

PTO/SB/30EFS (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Signature of Registered U.S. Patent Practitioner			
Signature	/David Klein/	Date (YYYY-MM-DD)	2011-09-15
Name	David Klein	Registration Number	41118

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal	
Application Number:	10553575
Filing Date:	26-Sep-2006
Title of Invention:	Systems to enhance data entry in mobile and fixed environment
First Named Inventor/Applicant Name:	Benjamin Firooz Ghassabian
Filer:	David L. Klein
Attorney Docket Number:	2104-25GHA-US
Filed as Small Entity	

U.S. National Stage under 35 USC 371 Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Request for continued examination	2801	1	405	405
		Total in USD ($)		**405**

Electronic Acknowledgement Receipt	
EFS ID:	10953414
Application Number:	10553575
International Application Number:	
Confirmation Number:	7464
Title of Invention:	Systems to enhance data entry in mobile and fixed environment
First Named Inventor/Applicant Name:	Benjamin Firooz Ghassabian
Customer Number:	32964
Filer:	David L. Klein
Filer Authorized By:	
Attorney Docket Number:	2104-25GHA-US
Receipt Date:	15-SEP-2011
Filing Date:	26-SEP-2006
Time Stamp:	10:51:34
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$405
RAM confirmation Number	14991
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Amendment After Final	2104-25GHA-US-sep11_usr.pdf	64440 e3d7392771a8492ac33f3d651e17b8695ef366ff	no	9
Warnings:					
Information:					
2	Request for Continued Examination (RCE)	RCE.pdf	76933 03c5546b8afcc1ce099a6edf2030a327903be33d	no	3
Warnings:					
This is not a USPTO supplied RCE SB30 form.					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30147 540512f08157c325360a01e5d6b729ba3221becc	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	171520		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

Applicant	:	Benjamin F. Ghassabian
Appl. No.	:	10/553575
Filed	:	September 26, 2006
Title	:	SYSTEM TO ENHANCE DATA ENTRY IN MOBILE AND FIXED ENVIRONMENT
Group Art Unit:		2629
Examiner	:	Vinh Tang Lam
Docket No.	:	2104-25GHA-US
Confirmation No.:		7464

Honorable Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

AMENDMENT

Sir:

In response to the Office Action of August 2, 2011, please amend the above-identified application as follows:

Samsung Exhibit 1006, Page 920 of 1063

In the claims:

1-34. (Cancelled)

35. (Previously amended) A data entry system, comprising:

an input unit adapted to receive a plurality of first input signals, wherein at least some of the first input signals are together associated with substantially all the letters of a language such that at least one of the first input signals is associated with more than one letter; and

a word predictive system adapted to select a word from a word database responsive to a sequence of first input signals provided by a user,

wherein the input unit comprises a plurality of keys representing the first input signals to which the letters are assigned, said keys being arranged in two groups, wherein each group is configured for use by a different finger of the user.

36. (Currently amended) The system of claim 35, comprising:

an output unit for displaying the selected word to a user; and

~~a second input unit adapted to receive second input signals corresponding to the letters of the language.~~

wherein the word predictive system is adapted to select a word for a sequence of first input signals by using received second input signals that correspond to the letters of the language.

37. (Previously amended) The system of claim 36, wherein the second input unit is adapted to receive speech signals corresponding to the letters of the language.

38. (Previously presented) The system of claim 37, comprising a recognition system which uses the speech signals corresponding to the letters of the alphabet in selecting for first input signals a single letter from the group of symbols associated with the first signal..

39. (Previously amended) The system of claim 35, wherein the two groups of keys are located on opposite sides of a device.

40. (Currently amended) The system of claim 35, wherein the data entry system comprises four keys, each key being used to generate one of the first input signals, ~~the four keys together being associated with substantially~~ all the letters of the language being

Samsung Exhibit 1006, Page 921 of 1063

assigned amongst all of said four keys, and wherein said four keys are operative to disambiguously generate all the letters of the language.

41. (Previously amended) The system of claim 40, wherein the keys of each group are arranged so as to form two columns of keys.

42-43. (Cancelled)

44. (Currently amended) The system of claim ~~42~~35, wherein the at least some of the first input signals are together associated with all the letters of the language.

45. (Previously amended) The system of claim 35, wherein the two groups of keys are located on opposite sides of a screen associated with the system.

46. (Previously amended) The system of claim 40, wherein the keys comprise at least one of virtual keys and physical keys.

47. (Cancelled)

48. (Previously presented) The system of claim 40, wherein different interactions with the keys correspond to different signals.

49. (Previously presented) The system of claim 48, wherein the keys respond to two different types of interactions, a first type of interaction corresponds to respective ones of the first signals and a second type of interaction corresponds to symbols other than those represented by the first signals.

50. (Previously presented) The system of claim 49, wherein the keys are associated with respective ones of the first signals when pressed slightly and with other symbols when pressed heavily.

51. (Cancelled)

52. (Previously amended) The system of claim 35, wherein the letters of the language are assigned to six keys.

53. (Cancelled)

54. (Previously amended) The system of claim 40, wherein the letter keys of each group are arranged so as to form two columns of keys.

55-80. (Cancelled)

81. (Previously presented) The system of claim 40, wherein the letter keys of each group are arranged so as to form two rows of keys.

82. (New) A data entry system, comprising:

an input unit adapted to receive a plurality of first input signals, wherein at least some of the first input signals are together associated with substantially all the letters of a language such that at least one of the first input signals is associated with more than one letter; and

a word predictive system adapted to select a word from a word database responsive to a sequence of first input signals provided by a user,

wherein the input unit comprises a plurality of keys representing the first input signals to which the letters are assigned, said keys being arranged in two groups, wherein each group is configured for use by a different finger of the user, and wherein at least one of said letters are associated with at least one of said keys based on a shape of said at least one of said letters.

83. (New) A data entry system, comprising:

an input unit adapted to receive a plurality of first input signals, wherein at least some of the first input signals are together associated with substantially all the letters of a language such that at least one of the first input signals is associated with more than one letter,

wherein the input unit comprises a plurality of keys representing the first input signals to which the letters are assigned, said keys being arranged in two groups, wherein each group is configured for use by a different finger of the user; and

a word predictive system adapted to select a word from a word database responsive to a sequence of first input signals provided by a user combined with a behavior of the user.

84. (New) The system of claim 83, wherein said behavior of the user comprises movement of said user towards a desired symbol.

85. (New) A data entry system of a device, comprising:

a plurality of input means, wherein four of the input means are together associated with substantially all of the letters of a language;

wherein the four input means to which the letters are assigned are arranged in two groups, two of the four input means in one group and the other two of the four groups in the other group, wherein the two groups are arranged to be manipulated by two different fingers of a user, and the two input means of each group are both arranged to be manipulated by the finger for that group.

86. (New) The data entry system according to claim 85, wherein said input means are used with a word predictive system using a dictionary of words, wherein upon actuation of at least said input means, the system predicts one or more words from the dictionary.

87. (New) The data entry system according to claim 86, wherein at least one letter of the predicted word comprises a letter entered precisely by said input means.

88. (New) The data entry system according to claim 85, wherein the plurality of input means further comprises a space key and a backspace key.

89. (New) The data entry system according to claim 85, wherein the input means of each group forms a column of two letter input means.

90. (New) The data entry system according to claim 88, wherein the backspace key is on the side of a first column of the input means, and the space key is on the side of a second column of the input means.

91. (New) The data entry system according to claim 85, wherein said input means are keys.

Samsung Exhibit 1006, Page 924 of 1063

92. (New) The data entry system according to claim 85, wherein the two groups of the input means are arranged on opposite sides of a surface of an input device.

93. (New) The data entry system according to claim 85, wherein the two groups of the input means are touch screen keys arranged on opposite sides of a screen of an input device.

94. (New) The data entry system according to claim 85, wherein the two groups of the input means are separated by at least a portion of a screen of an input device.

REMARKS

Applicant has carefully studied the outstanding Official Action mailed on August 2, 2011. This response is intended to be fully responsive to all points of rejection raised by the Examiner and is believed to place the application in condition for allowance. Favorable reconsideration and allowance of the application are respectfully requested.

Applicant wishes to express his gratitude to the Examiner for the courtesy of a telephone interview on September 8, 2011, with the undersigned, in which the prior art was discussed.

Claim 44 stands objected due to an informality. This has been corrected by appropriate amendment as suggested by the Examiner.

Claims 35-41, 44-52, 54, 60-66 and 81 stand rejected under 35 USC §103(a) as being unpatentable over King et al. (US 6011554) in view of Goren (US 7190351).

Applicant traverses the above rejections. The present invention has different structure and functionality than the cited art, examples of which are now explained.

As the Examiner correctly points out, King does not group the keys on different sides of the device. The Examiner combines Goren with King because Goren in Fig. 24B has keys on different sides of the device. However, Goren is fundamentally different than King and fundamentally different than the instant invention. Both King and the instant invention teach the use of keys with more than one letter, which causes ambiguity as to which letter the user desires to select. Goren explicitly teaches away from such ambiguity, as Goren clearly denounces such systems in the background:

"Cell phone input of information via small alphanumeric keys is cumbersome, slow and inaccurate, and multitapping on telephone keypads is awkward. Reduced keyboard disambiguating programs are usually inefficient, prone to error and often require the user to choose from a long list of potential words to find a word that is derived from any certain combination of keystrokes. This requires pressing a sequence of keys and then filtering the word out from a list. Additionally, the device may need to use a large amount of storage capacity in order to process this information. Also, disambiguating programs may be less useful when more than one language is used. Another problem is the cost and placement of the button-type alphanumeric keyboard on a device such as a cell phone, so that it does not take away space from the small display screens found on the device. The newer Internet enabled PDA-cell phone hybrids need an improved input method and system to best realize their potential."

Thus it is respectfully deemed improper to combine King with Goren. The skilled artisan is taught by Goren to reject the King system, as quoted above. Thus, the rejections are respectfully deemed overcome.

In addition, the instant invention has different structure than King and certainly than Goren. For example, in one of the embodiments of the instant invention, all the letters are allocated to just four keys, and these ***four keys are operative to disambiguously generate all the letters of the language***. For disambiguation, King requires a separate select key. Claim 40 has been amended to recite this patentably different structure. The basis for this amendment is as follows:

The embodiment of four keys is described, for example, in paragraph [0583]:

"[0583] According to one embodiment of the invention, still fewer number of keys may be used to contain alphabetical letters (and other symbols as described before) and being used with the press and speak data entry systems of the invention. FIG. 45c shows as an example, four keys 4530-4533 having English alphabetical characters assigned to them. To keep this arrangement familiar, the QWERTY arrangement of the letters of the top two rows of the keypad 4520 of the FIG. 45b are maintained and the letters of the lowest row of said keypad 4520 of the FIG. 45b are distributed within the keys of the corresponding columns (e.g. left, right) of said four keys 4530-4533 in a manner to maintain the familiarity of an "almost QWERTY" keyboard along with high accuracy of the voice recognition system of the invention. For example, letters "n" 4537 and "m" 4538 which have been located on the lowest right key of the keypad 4520 of the FIG. 45b, are here separated and assigned, respectively, to the right keys 4533 and 4532 of the keypad 4530. It is understood that other symbols such as punctuation marks, numbers, functions, etc., may be distributed among said keys or other keys of a keypad comprising said alphabetical keys and be entered according to the data entry system of the invention as described in this application and the applications filed before by this inventor."

The keys themselves are used to disambiguously generate a particular letter / word. This is described, for example, in paragraph [0172]:

"[0172] Of course, instead of using a voice/speech, a behavior of a user combined with a key interaction may select a symbol. For example, a user may press the key 102 heavily and swipe his finger towards a desired symbol."

New claims 83 and 84 have been added to recite this patentable difference, as well, based on the above quoted paragraph [0172] and claim 83 also covers paragraph [0170]:

Samsung Exhibit 1006, Page 927 of 1063

"[0170] If the user does not speak, a predefined symbol among those candidated symbols, may be selected as default. In this example, the punctuation "," shown in a box 103 is selected. To select one of the other candidated symbols, for example the letter "B", the user may speak said letter."

As another example, King and Goren are silent about HOW the letters are assigned to keys. The skilled artisan has no information from King and Goren how to arrange the letters on the keys. In contrast, the instant invention explains how to arrange the letters on the keys. For example, as stated in the specification:

"[0570] With continuous reference to this embodiment, said alphabetical letters may be distributed on the keys of said keypad in a manner to locate ambiguous letters on different keys. FIG. 44b shows as an example, a QWERTY arranged keypad 4407 with minor modifications. In said keypad, the key assignment of the letters "M" 4408 and "Z" 4409, are interchanged in a manner to eliminate the ambiguity between the letters "M" and "N". In this example, the QWERTY configuration has been slightly modified but by using said keypad with the data entry system of the invention, the recognition accuracy may be augmented. It is understood that any other letter arrangement and modifications may be considered."

As one example from the above passage, the allocation of letters to a particular key is based on the shapes of the letters, as quoted above: "In said keypad, the key assignment of the letters "M" 4408 and "Z" 4409, are interchanged in a manner to eliminate the ambiguity between the letters "M" and "N"." Claim 82 has been added to recite this feature, which is deemed patentable over the prior art.

Claims 85-94 have also been added and are differently worded versions of the above features.

Accordingly, claims 35-41, 44-46, 48-50, 52, 54, and 81-94 are respectfully deemed allowable. Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,
DEKEL PATENT LTD.
/David Klein/

David Klein, Patent Agent
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Tel 972-8-949-5334
Fax 972-949-5323
E-mail dekelltd@netvision.net.il

Samsung Exhibit 1006, Page 928 of 1063

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 10/553,575	Filing Date 09/26/2006	☐ To be Mailed

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)	SMALL ENTITY ☒		OR	OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	09/15/2011	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 27	Minus	** 40	= 0	X $26 =	0	OR	X $ =	
	Independent (37 CFR 1.16(h))	* 4	Minus	***5	= 0	X $110 =	0	OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE	0	OR	TOTAL ADD'L FEE	

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)	OR	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/DEBRA SAVOY/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Patent Application Fee Transmittal	
Application Number:	10553575
Filing Date:	26-Sep-2006
Title of Invention:	Systems to enhance data entry in mobile and fixed environment
First Named Inventor/Applicant Name:	Benjamin Firooz Ghassabian
Filer:	David L. Klein
Attorney Docket Number:	2104-25GHA-US
Filed as Small Entity	

U.S. National Stage under 35 USC 371 Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Claims in excess of 20	2615	9	26	234
Independent claims in excess of 3	2614	1	110	110
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**344**

Electronic Acknowledgement Receipt	
EFS ID:	10962260
Application Number:	10553575
International Application Number:	
Confirmation Number:	7464
Title of Invention:	Systems to enhance data entry in mobile and fixed environment
First Named Inventor/Applicant Name:	Benjamin Firooz Ghassabian
Customer Number:	32964
Filer:	David L. Klein
Filer Authorized By:	
Attorney Docket Number:	2104-25GHA-US
Receipt Date:	16-SEP-2011
Filing Date:	26-SEP-2006
Time Stamp:	02:48:11
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$344
RAM confirmation Number	7062
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Fee Worksheet (SB06)	fee-info.pdf	31352 da9266c18a105782727d6473a952b82063e9c7e8	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	31352	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,575	09/26/2006	Benjamin Firooz Ghassabian	2104-25GHA-US	7464

32964 7590 12/06/2011

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EXAMINER	
LAM, VINH TANG	
ART UNIT	PAPER NUMBER
2629	
MAIL DATE	DELIVERY MODE
12/06/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/553,575	GHASSABIAN, BENJAMIN FIROOZ	
	Examiner	Art Unit	
	VINH LAM	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 September 2011*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *1-94* is/are pending in the application.

5a) Of the above claim(s) *1-34,42,43,47,50-80 and 82-84* is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☐ Claim(s) *35-41, 44-46, 48-49, 81, & 85-94* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *17 October 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the **second paragraph** of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claim **90** recites the limitation "*the side*" in "…the backspace key is on *the side* of a first column of the input means, and the space key is on *the side* of a second column of the input means." There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims **85**, **91**, and **92** are rejected under 35 U.S.C. 102(e) as being anticipated by **Blumberg (US Patent No. 2003/0038735).**

Regarding Claim **85**, (New) **Blumberg** teaches a data entry system of a device, comprising:

a plurality of input means *([**0115**], FIG. **11**, i.e. **keys**)*, wherein four of the input means are together associated with substantially all of the letters of a language *([**0115**], FIG. **11**)*;

wherein the four input means to which the letters are assigned are arranged in two groups *([**0115**], FIG. **11**, i.e. left (**1&3**) and right **(2&4)**)*, two of the four input means in one group and the other two of the four groups in the other group *([**0115**], FIG. **11**, i.e. left (**1&3**) and right **(2&4)**)*, wherein the two groups are arranged to be manipulated by two different fingers of a user *([**0115**], FIG. **11**, i.e. left (**1&3**) and right **(2&4)**)*, and the two input means of each group are both arranged to be manipulated by the finger for that group *([**0115**], FIG. **11**, i.e. left (**1&3**) and right **(2&4)**)*.

Regarding Claim **91**, (New) **Blumberg** teaches the data entry system according to claim 85, wherein said input means are keys *([**0115**], FIG. **11**)*.

Regarding Claim **92**, (New) **Blumberg** teaches the data entry system according to claim 85, wherein the two groups of the input means are arranged on opposite sides of a surface of an input device *([**0115**], FIG. **11**, i.e. left (**1&3**) and right **(2&4)**)*.

3. Claims **86-90** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Blumberg (US Patent No. 2003/0038735)** in view of **King et al. (US Patent No. 6011554).**

Regarding Claim **86**, (New) **Blumberg** teaches the data entry system according to claim 85.

However, **Blumberg** does not teach that input means are used with a word predictive system using a dictionary of words, wherein upon actuation of at least said input means, the system predicts one or more words from the dictionary.

In the same field of endeavor, **King et al.** teach input means are used with a word predictive system *(Col. **6**, Ln. **17-45**, FIGs. **1A & 1B**, i.e. keyboard disambiguating system **50**)* using a dictionary of words *(Col. **7**, Ln. **19-42**, FIG. **6**, i.e. selection list **76**)*, wherein upon actuation of at least said input means, the system predicts one or more words from the dictionary *(Col. **7**, Ln. **19-42**; Col. **20**, Ln. **1-6**, FIG. **6**, i.e. **done**)*.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine **Blumberg** teaching of a data entry system comprising plurality of input means with **King et al.** teaching of a word predictive system *to provide faster and easier yet more accurate data input*.

Regarding Claim **87**, (New) the data entry system according to claim 86, wherein **King et al.** teach at least one letter of the predicted word comprises a letter

entered precisely by said input means *(Col. **7**, Ln. **19-42**; Col. **20**, Ln. **1-6**, FIG. **6**, i.e. **done**)*.

Regarding Claim **88**, (New) the data entry system according to claim 85, wherein **Blumberg** teaches the plurality of input means further comprises a space key *([**0059**], FIG. **3**, i.e. **62**)* and a backspace key *([**0059**], FIG. **3**, i.e. **54**)*.

Regarding Claim **89**, (New) the data entry system according to claim 85, wherein **Blumberg** teaches the input means of each group forms a column of two letter input means *([**0115**], FIG. **11**, i.e. **A** of button **1** and **S** of button **3**)*.

Regarding Claim **90**, (New) the data entry system according to claim 88, wherein **Blumberg** teaches the backspace key is on the side of a first column *([**0059**], FIG. **3**, i.e. upper side of character keys **1-3**)* of the input means, and the space key is on the side of a second column *([**0059**], FIG. **3**, i.e. lower side of character keys **4-6**)* of the input means.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims **35**-**41**, **44**, and **52** are rejected under 35 U.S.C. 103(a) as being unpatentable over **King et al. (US Patent No. 6011554)** in view of **Blumberg (US Patent No. 2003/0038735).**

Regarding Claim **35**, (Previously amended) **King et al.** teach a data entry system, comprising:

an input unit *(Col. **6**, Ln. **16**-**35**, FIG. **1A**, i.e. **50**)* adapted to receive a plurality of first input signals *(Col. **6**, Ln. **16**-**35**, FIG. **1B**, i.e. signals from left two rows of keys **56**)*, wherein at least some of the first input signals *(Col. **6**, Ln. **16**-**35**, FIG. **1B**, i.e. signals from left two rows of keys **56**)* are together associated with substantially all the letters *(Col. **6**, Ln. **16**-**35**, FIG. **1B**, i.e. keys **56** which include letter groups **RPQ, ADF, OLX, EWV,CYK,** and **THJ**)* of a language *(Col. **6**, Ln. **16**-**35**, FIG. **1B**, i.e. English letters)* such that at least one *(Col. **6**, Ln. **16**-**35**, FIG. **1B**, i.e. one of keys **56**)* of the first input signals is associated with more than one letter *(Col. **6**, Ln. **16**-**35**, FIG. **1B**, i.e. top row and left most key which includes at least **RPQ**)*; and

a word predictive system *(Col. **6**, Ln. **17**-**45**, FIGs. **1A & 1B**, i.e. keyboard disambiguating system **50**)* adapted to select a word *(Col. **7**, Ln. **19**-**42**; Col. **20**, Ln. **1**-**6**, FIG. **6**, i.e. **done**)* from a word database *(Col. **7**, Ln. **19**-**42**, FIG. **6**, i.e. selection list **76**)* responsive to a sequence *(Col. **7**, Ln. **19**-**42**, i.e. **ADF, OLX, NBZ**, and **EWV**)* of first input signals provided by a user *(Col. **8**, Ln. **15**-**24**, FIG. **6**)*,

wherein the input unit comprises a plurality of keys representing the first input signals to which the letters are assigned *(Col. **6**, Ln. **16-35**, FIG. **1B**, i.e. keys **56**).*

However, **King et al.** do not teach that said keys being arranged in two groups, wherein each group is configured for use by a different finger of the user.

In the same field of endeavor, **Blumberg** teaches said keys being arranged in two groups *([**0115**], FIG. **11**, i.e. left (**1&3**) and right (**2&4**))*, wherein each group is configured for use by a different finger of the user (*[**0115**], FIG. **11***).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine **King et al.** teaching of a data entry system comprising plurality of input buttons having word prediction capability with **Blumberg** teaching of arrangement of input buttons in left and right columns *to provide faster and easier data input*.

Regarding Claim **36**, (Currently amended) the system of claim 35, **King et al.** teach comprising:

an output unit *(Col. **20**, Ln. **1-4**, FIG. **6**, i.e. display **53**)* for displaying the selected word *(Col. **20**, Ln. **12-1**, FIG. **6**, e.g. **done**)* to a user; and

wherein the word predictive system is adapted to select a word *(Col. **20**, Ln. **12-1**, FIG. **6**, e.g. **done**)* for a sequence of first input signals *(Col. **7**, Ln. **19-42**, i.e. **ADF** and **OLX**)* by using received second input *(Col. **7**, Ln. **19-42**, i.e. **NBZ**)* that correspond to the letters of the language *(Col. **7**, Ln. **19-42**, i.e. **NBZ,** e.g. **English**)*.

Regarding Claim **37**, (Previously amended) the system of claim 36, wherein the second input unit is adapted to receive speech signals corresponding to the letters of the language which is well-known in the art as “Speech Recognition”.

Regarding Claim **38**, (Previously presented) the system of claim 37, comprising a recognition system which uses the speech signals corresponding to the letters of the alphabet in selecting for first input signals a single letter from the group of symbols associated with the first signal which is well-known in the art of “Speech Recognition”.

Regarding Claim **39**, (Previously amended) the system of claim 35, wherein **Blumberg** teaches the two groups of keys are located on opposite sides of a device (***[0115]**, FIG. **11**, i.e. **1/3** & **2/4***).

Regarding Claim **40**, (Currently amended) **King et al.** and **Goren** teach the system of claim 35, wherein **Blumberg** teaches the data entry system comprises four keys *(**[0115]**, FIG. **11**, i.e. left (**1&3)** and right **(2&4))*, each key being used to generate one of the first input signals (***[0087]***), all the letters of the language being assigned amongst all of said four keys, and wherein said four keys are operative to disambiguously generate all the letters of the language *(**[0115]**, FIG. **11**, i.e. left (**1&3)** and right **(2&4))*.

Regarding Claim **41**, (Previously amended) the system of claim 40, wherein **Blumberg** teaches the keys of each group are arranged so as to form two columns of keys (***[0115]**, FIG. **11**, i.e. **1/3** & **2/4***).

Regarding Claim **44**, (Currently amended) the system of claim 35, wherein **Blumberg** teaches the at least some of the first input signals are together associated with all the letters of the language *([**0115**], FIG. **11**, i.e. left (**1&3**) and right **(2&4)**)*.

Regarding Claim **52**, (Previously amended) the system of claim 35 , wherein **King et al.** teach the letters of the language are assigned *(Col. **6**, Ln. **16-35**, FIG. **1B**, i.e. keys **56** which include letter groups **RPQ, ADF, OLX, EWV,CYK,** and **THJ**)*.

5. Claims **45-46**, **48-50**, **54**, **81**, and **93-94** are rejected under 35 U.S.C. 103(a) as being unpatentable over **King et al. (US Patent No. 6011554)** in view of **Blumberg (US Patent No. 2003/0038735)** and further in view of **Goren (US Patent No. 7190351).**

Regarding Claim **45**, (Previously amended) **King et al.** and **Blumberg** teach the system of claim 35.

However, **King et al.** and **Blumberg** do not explicitly teach that the two groups of keys are located on opposite sides of a screen associated with the system.

In the same field of endeavor, **Goren** teaches that the two groups of keys are located on opposite sides of a screen associated with the system (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **504** & **506***).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine **King et al.** and **Blumberg** teaching of a data entry

system including plurality of keys with **Goren** teaching of the two groups of keys are located on opposite sides of a screen associated with the system *to improve the speed of input data.*

Regarding Claim **46**, (Previously amended) the system of claim 40, wherein **King et al.** teach the keys comprise at least one of virtual keys and physical keys *(Col. **6**, Ln. **16-35**, FIG. **1A**)*.

Regarding Claim **48**, (Previously presented) the system of claim 40, wherein **King et al.** teach different interactions with the keys correspond to different signals (*Col. **6**, Ln. **28-33**, FIG. **1B**, e.g. **1, 4,** and **7…***).

Regarding Claim **49**, (Previously presented) the system of claim 48, wherein **King et al.** teach the keys respond to two different types of interactions, a first type of interaction corresponds to respective ones of the first signals and a second type of interaction corresponds to symbols other than those represented by the first signals (*Col. **6**, Ln. **28-33**, FIG. **1B**, e.g. **1, C, Y,** or **K…**)*.

Regarding Claim **50**, (Previously presented) the system of claim 49, wherein **King et al.** teach the keys are associated with respective ones of the first signals when pressed slightly and with other symbols when pressed heavily *(Col. **6**, Ln. **28-33**, FIG. **1B**, e.g. **1, C, Y,** or **K…**)*.

Regarding Claim **54**, (Previously amended) the system of claim 40, wherein **Goren** teaches the letter keys of each group are arranged so as to form two columns of keys (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **504** & **506**)*.

Regarding Claim **81**, (Previously presented) the system of claim 40, wherein **Goren** teaches the letter keys of each group are arranged so as to form two rows of keys (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **504** & **506***).

Regarding Claim **93**, (New) the data entry system according to claim 85, wherein **Goren** the two groups of the input means are touch screen keys arranged on opposite sides of a screen (*Col. **21**, Ln. **23-44**, FIGs. **24B** & **24C***) of an input device.

Regarding Claim **94**, (New) the data entry system according to claim 85, wherein **Goren** the two groups of the input means are separated by at least a portion of a screen (*Col. **21**, Ln. **23-44**, FIGs. **24B** & **24C***) of an input device.

Response to Arguments/Amendments/Remarks

6. Claims **1-34, 42-43, 47, 51, 53, 55-80** are canceled.

7. Newly submitted claims **82**, **83**, and **84** are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

"…at least one of said keys *based on a shape* of said at least one of said letters" (Claim 82) and

"…responsive to a sequence of first input signals provided by a user *combined with a behavior of the user*" (Claims 83 & 84).

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for

prosecution on the merits. Accordingly, claims **82**, **83**, and **84** are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

8. Applicant's arguments with respect to claims 35-41, 44-52, 54, 60-66, and 81 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art(s) made of record and not relied upon (is)/are considered pertinent to applicant's disclosure: Chadha; Lovleen (US Patent/PGPub. No. 7218249).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VINH T. LAM whose telephone number is (571)270-3704. The examiner can normally be reached on M-F (7:00-4:30) EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on (571) 272-7674. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/VINH LAM/

Examiner, Art Unit 2629

/Amare Mengistu/

Supervisory Patent Examiner, Art Unit 2629

Notice of References Cited	Application/Control No. 10/553,575	Applicant(s)/Patent Under Reexamination GHASSABIAN, BENJAMIN FIR	
	Examiner VINH LAM	Art Unit 2629	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-6,011,554 A	01-2000	King et al.	715/811
*	B	US-6,356,866 B1	03-2002	Pratley et al.	704/9
*	C	US-6,359,572 B1	03-2002	Vale, Peter O.	341/23
*	D	US-2003/0038735 A1	02-2003	Blumberg, Marvin R.	341/22
*	E	US-7,190,351 B1	03-2007	Goren, Michael	345/173
*	F	US-7,218,249 B2	05-2007	Chadha, Lovleen	341/23
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10553575	GHASSABIAN, BENJAMIN FIROOZ
	Examiner	Art Unit
	VINH T LAM	2629

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	07/30/2008	03/31/2009	11/09/2009	04/16/2010	10/30/2010	07/06/2011	11/22/2011		
	1	÷	N	-	N	-	-	-		
	2	÷	N	-	N	-	-	-		
	3	÷	N	-	N	-	-	-		
	4	÷	N	-	N	-	-	-		
	5	÷	N	-	N	-	-	-		
	6	÷	N	-	N	-	-	-		
	7	÷	N	-	N	-	-	-		
	8	÷	N	-	N	-	-	-		
	9	÷	N	-	N	-	-	-		
	10	÷	N	-	N	-	-	-		
	11	÷	N	-	N	-	-	-		
	12	÷	N	-	N	-	-	-		
	13	÷	N	-	N	-	-	-		
	14	÷	N	-	N	-	-	-		
	15	÷	N	-	N	-	-	-		
	16	÷	N	-	N	-	-	-		
	17	÷	N	-	N	-	-	-		
	18	÷	N	-	N	-	-	-		
	19	÷	N	-	N	-	-	-		
	20	÷	N	-	N	-	-	-		
	21	÷	N	-	N	-	-	-		
	22	÷	N	-	N	-	-	-		
	23	÷	N	-	N	-	-	-		
	24	÷	✓	-	N	-	-	-		
	25	÷	✓	-	N	-	-	-		
	26	÷	✓	-	N	-	-	-		
	27	÷	✓	-	N	-	-	-		
	28	÷	✓	-	N	-	-	-		
	29	÷	✓	-	N	-	-	-		
	30	÷	✓	-	N	-	-	-		
	31	÷	✓	-	N	-	-	-		
	32	÷	✓	-	N	-	-	-		
	33		✓	-	N	-	-	-		
	34		✓	-	N	-	-	-		
	35			N	✓	✓	✓	✓		

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10553575	GHASSABIAN, BENJAMIN FIROOZ
	Examiner	Art Unit
	VINH T LAM	2629

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	07/30/2008	03/31/2009	11/09/2009	04/16/2010	10/30/2010	07/06/2011	11/22/2011		
	36			N	✓	✓	✓	✓		
	37			N	✓	✓	✓	✓		
	38			N	✓	✓	✓	✓		
	39			N	✓	✓	✓	✓		
	40			N	✓	✓	✓	✓		
	41			N	✓	✓	✓	✓		
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	46			N	✓	✓	✓	✓		
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	48			N	✓	✓	✓	✓		
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	61			N	✓	✓	-	-		
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	65			N	✓	✓	-	-		
	66			N	✓	✓	-	-		
	67			N	✓	-	-	-		
	68			N	✓	✓	-	-		
	69			N	✓	✓	-	-		
	70			N	✓	✓	-	-		

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10553575	GHASSABIAN, BENJAMIN FIROOZ
	Examiner	Art Unit
	VINH T LAM	2629

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	07/30/2008	03/31/2009	11/09/2009	04/16/2010	10/30/2010	07/06/2011	11/22/2011		
	71			N	✓	✓	-	-		
	72			N	✓	✓	-	-		
	73			N	✓	✓	-	-		
	74				✓	✓	-	-		
	75				✓	✓	-	-		
	76				✓	✓	-	-		
	77				✓	✓	-	-		
	78				✓	✓	-	-		
	79				✓	✓	-	-		
	80				✓	✓	-	-		
	81						✓	✓		
	82							N		
	83							N		
	84							N		
	85							✓		
	86							✓		
	87							✓		
	88							✓		
	89							✓		
	90							✓		
	91							✓		
	92							✓		
	93							✓		
	94							✓		

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10553575	GHASSABIAN, BENJAMIN FIROOZ
	Examiner	Art Unit
	VINH T LAM	2629

SEARCHED			
Class	Subclass	Date	Examiner
345	156-172	3/31/2009	Vinh Lam

SEARCH NOTES		
Search Notes	Date	Examiner
Search Inventors. No ODP.	7/30/2008	Vinh Lam
Search Internet for synonyms and technical terms.	3/31/2009	Vinh Lam
Search Class/Subclass with 2629 QEM support.	3/31/2009	Vinh Lam
Search EAST for prior arts.	11/22/2011	Vinh Lam
Review Amendments and Arguments	11/22/2011	Vinh Lam

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

/VINH LAM/ Examiner, Art Unit 2629	

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

Applicant	:	Benjamin F. Ghassabian
Appl. No.	:	10/553575
Filed	:	September 26, 2006
Title	:	SYSTEM TO ENHANCE DATA ENTRY IN MOBILE AND FIXED ENVIRONMENT
Group Art Unit:		2629
Examiner	:	Vinh Tang Lam
Docket No.	:	2104-25GHA-US
Confirmation No.:		7464

Honorable Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

AMENDMENT

Sir:

In response to the Office Action of December 6, 2011, please amend the above-identified application as follows:

Samsung Exhibit 1006, Page 953 of 1063

In the claims:

1-34. (Cancelled)

35. (Currently amended) A data entry system, comprising:

an input unit adapted to receive a plurality of first input signals, wherein at least some of the first input signals are together associated with substantially all the letters of a language such that at least one of the first input signals is associated with more than one letter; and

a word predictive system adapted to select a word from a word database responsive to a sequence of first input signals provided by a user,

wherein the input unit comprises a plurality of keys representing the first input signals to which the letters are assigned, said keys being arranged in two groups, wherein each group is configured for use by a different finger of the user, wherein said two groups comprise a left group and a right group, left and right corresponding to how the letters would be read if they would appear on said keys, and

further comprising a backspace key and a space key, one of which is adjacent said left group and does not extend to said right group and the other of which is adjacent said right group and does not extend to said left group.

36. (Previously amended) The system of claim 35, comprising:

an output unit for displaying the selected word to a user; and

wherein the word predictive system is adapted to select a word for a sequence of first input signals by using received second input signals that correspond to the letters of the language.

37. (Previously amended) The system of claim 36, wherein the second input unit is adapted to receive speech signals corresponding to the letters of the language.

38. (Previously presented) The system of claim 37, comprising a recognition system which uses the speech signals corresponding to the letters of the alphabet in selecting for first input signals a single letter from the group of symbols associated with the first signal..

39. (Previously amended) The system of claim 35, wherein the two groups of keys are located on opposite sides of a device.

Samsung Exhibit 1006, Page 954 of 1063

40. (Previously amended) The system of claim 35, wherein the data entry system comprises four keys, each key being used to generate one of the first input signals, all the letters of the language being assigned amongst all of said four keys, and wherein said four keys are operative to disambiguously generate all the letters of the language.

41. (Previously amended) The system of claim 40, wherein the keys of each group are arranged so as to form two columns of keys.

42-43. (Cancelled)

44. (Previously amended) The system of claim 35, wherein the at least some of the first input signals are together associated with all the letters of the language.

45. (Currently amended) The system of claim 35, wherein ~~the two groups of keys are located on opposite sides of a screen associated with the system~~said space key and said backspace key are arranged such that the one which is adjacent said left group is further to the left of said left group and the one which is adjacent said right group is further to the right of said right group.

46. (Previously amended) The system of claim 40, wherein the keys comprise at least one of virtual keys and physical keys.

47. (Cancelled)

48. (Previously presented) The system of claim 40, wherein different interactions with the keys correspond to different signals.

49. (Previously presented) The system of claim 48, wherein the keys respond to two different types of interactions, a first type of interaction corresponds to respective ones of the first signals and a second type of interaction corresponds to symbols other than those represented by the first signals.

50. (Previously presented) The system of claim 49, wherein the keys are associated with respective ones of the first signals when pressed slightly and with other symbols when pressed heavily.

51. (Cancelled)

52. (Previously amended) The system of claim 35, wherein the letters of the language are assigned to six keys.

53. (Cancelled)

54. (Previously amended) The system of claim 40, wherein the letter keys of each group are arranged so as to form two columns of keys.

55-80. (Cancelled)

81. (Previously presented) The system of claim 40, wherein the letter keys of each group are arranged so as to form two rows of keys.

82. (Withdrawn) A data entry system, comprising:

an input unit adapted to receive a plurality of first input signals, wherein at least some of the first input signals are together associated with substantially all the letters of a language such that at least one of the first input signals is associated with more than one letter; and

a word predictive system adapted to select a word from a word database responsive to a sequence of first input signals provided by a user,

wherein the input unit comprises a plurality of keys representing the first input signals to which the letters are assigned, said keys being arranged in two groups, wherein each group is configured for use by a different finger of the user, and wherein at least one of said letters are associated with at least one of said keys based on a shape of said at least one of said letters.

83. (Withdrawn) A data entry system, comprising:

an input unit adapted to receive a plurality of first input signals, wherein at least some of the first input signals are together associated with substantially all the letters of a language such that at least one of the first input signals is associated with more than one letter,

wherein the input unit comprises a plurality of keys representing the first input signals to which the letters are assigned, said keys being arranged in two groups, wherein each group is configured for use by a different finger of the user; and

a word predictive system adapted to select a word from a word database responsive to a sequence of first input signals provided by a user combined with a behavior of the user.

84. (Withdrawn) The system of claim 83, wherein said behavior of the user comprises movement of said user towards a desired symbol.

85. (Currently amended) A data entry system of a device, comprising:

a plurality of input means, wherein four of the input means are together associated with substantially all of the letters of a language;

wherein the four input means to which the letters are assigned are arranged in two groups, two of the four input means in one group and the other two of the four groups in the other group, wherein the two groups are arranged to be manipulated by two different fingers of a user, and the two input means of each group are both arranged to be manipulated by the finger for that group, wherein said two groups comprise a left group and a right group, left and right corresponding to how the letters would be read if they would appear on said input means, and

further comprising a backspace key and a space key, one of which is adjacent said left group and does not extend to said right group and the other of which is adjacent said right group and does not extend to said left group.

86. (Previously presented) The data entry system according to claim 85, wherein said input means are used with a word predictive system using a dictionary of words, wherein upon actuation of at least said input means, the system predicts one or more words from the dictionary.

87. (Previously presented) The data entry system according to claim 86, wherein at least one letter of the predicted word comprises a letter entered precisely by said input means.

Samsung Exhibit 1006, Page 957 of 1063

88. (Currently amended) The data entry system according to claim 85, wherein ~~the plurality of input means further comprises a~~ said space key and said backspace key are arranged such that the one which is adjacent said left group is further to the left of said left group and the one which is adjacent said right group is further to the right of said right group.

89. (Previously presented) The data entry system according to claim 85, wherein the input means of each group forms a column of two letter input means.

90. (Currently amended) The data entry system according to claim 88, wherein the backspace key is on ~~the~~ a side of a first column of the input means, and the space key is on ~~the~~ a side of a second column of the input means.

91. (Previously presented) The data entry system according to claim 85, wherein said input means are keys.

92. (Previously presented) The data entry system according to claim 85, wherein the two groups of the input means are arranged on opposite sides of a surface of an input device.

93. (Previously presented) The data entry system according to claim 85, wherein the two groups of the input means are touch screen keys arranged on opposite sides of a screen of an input device.

94. (Previously presented) The data entry system according to claim 85, wherein the two groups of the input means are separated by at least a portion of a screen of an input device.

REMARKS

Applicant has carefully studied the outstanding Official Action mailed on December 6, 2011. This response is intended to be fully responsive to all points of rejection raised by the Examiner and is believed to place the application in condition for allowance. Favorable reconsideration and allowance of the application are respectfully requested.

Claim 90 stands rejected under 35 USC §112, second paragraph, for indefiniteness. This has been corrected by appropriate amendment.

Claims 85, 91 and 92 stand rejected under 35 USC §102(e) as being anticipated by Blumberg (US 2003/0038735).

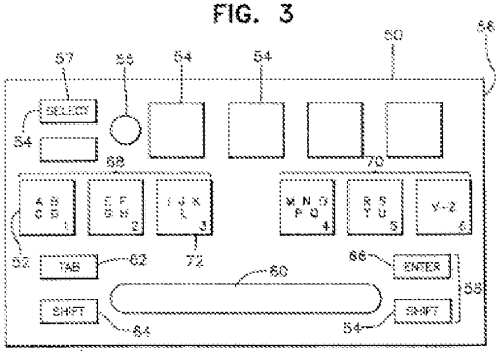
Claims 86-90 stand rejected under 35 USC §103(a) as being unpatentable over Blumberg (US 2003/0038735) in view of King et al. (US 6011554).

Claims 35-41, 44 and 52 stand rejected under 35 USC §103(a) as being unpatentable over King et al. (US 6011554) in view of Blumberg (US 2003/0038735).

Claims 45-46, 48-50, 54, 81 and 93-94 stand rejected under 35 USC §103(a) as being unpatentable over King et al. (US 6011554) in view of Blumberg (US 2003/0038735) and further in view of Goren (US 7190351).

Applicant traverses the above rejections. The present invention has different structure than the cited art, examples of which are now explained.

FIG. 3



[0059] The function keys **54** may correspond to any suitable function to be performed. Preferably, however, the bottom row of function keys **54** comprise for instance, SPACE BAR **60**, TAB key **62**, SHIFT KEY **64**, and ENTER key **66**. The top row **56** of function keys **54** may correspond to numbers or characters, cursor movement keys, definable function keys, capitalization, backspace, or keys having other like operations. In addition, keyboard **50** may be used in conjunction with expanded keyboard **14**. Expanded keyboard **14** would supply any of the numerical or function keys **54** not provided by keyboard **50**. Accordingly, the expanded keyboard **14** is optional, although it complements special keyboard **50** by providing the full spectrum of traditional function and character keys.

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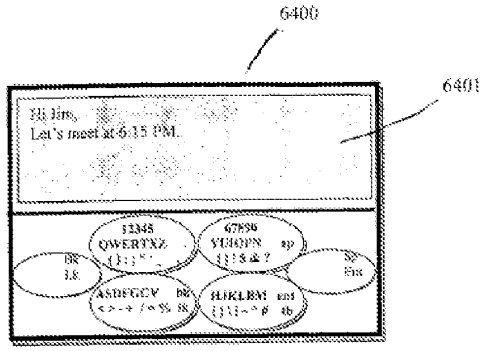


Fig. 64a

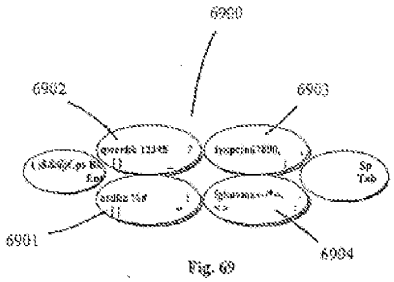


Fig. 69

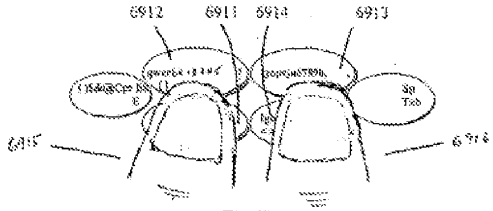


Fig. 69a

The example of different structure selected in this response, among other examples not mentioned here for the sake of expediting allowance, is that of the position of the backspace and space keys.

As clearly seen in Figs. 64a, 69 and 69a (this feature appears in other figures as well), the present invention teaches two groups of four keys: a left group (with two keys) and a right group (with two keys). The sense of left and right corresponds to how the letters would be read if they would appear on the keys, as clearly shown in the drawings (left and right of the drawing sheet). The backspace key (Bk) and the space key (Sp) are clearly shown. In this non-limiting example, one of them (e.g., the backspace key) is adjacent the left group and does not extend to the right group and the other is adjacent the right group and does not extend to the left group. This structure is clearly different from the cited art – please see Fig. 3 of Blumberg reproduced above.

Accordingly, claims 35-41, 44-46, 48-50, 52, 54, and 81-94 are respectfully deemed allowable. Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,
DEKEL PATENT LTD.
/David Klein/
David Klein, Patent Agent
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Fax 972-949-5323
E-mail dekelltd@netvision.net.il

Electronic Acknowledgement Receipt	
EFS ID:	12233762
Application Number:	10553575
International Application Number:	
Confirmation Number:	7464
Title of Invention:	Systems to enhance data entry in mobile and fixed environment
First Named Inventor/Applicant Name:	Benjamin Firooz Ghassabian
Customer Number:	32964
Filer:	David L. Klein
Filer Authorized By:	
Attorney Docket Number:	2104-25GHA-US
Receipt Date:	06-MAR-2012
Filing Date:	26-SEP-2006
Time Stamp:	13:50:03
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Amendment/Req. Reconsideration-After Non-Final Reject	2104-25GHA-US-mar12_usr.pdf	121801 ffb66a22f6cd9b2785cc19b47138fe2f2654628 9	no	9
Warnings:					
Information:					

Total Files Size (in bytes):	121801

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
10/553,575	09/26/2006	

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY ☒ RATE ($)	SMALL ENTITY ☒ FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	03/06/2012	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 29	Minus	** 40	= 0	X $30 =	0	OR	X $ =	
	Independent (37 CFR 1.16(h))	* 4	Minus	***5	= 0	X $125 =	0	OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE	0	OR	TOTAL ADD'L FEE	

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)	OR	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/GLORIA ANTHONY/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,575	09/26/2006	Benjamin Firooz Ghassabian	2104-25GHA-US	7464

32964 7590 04/09/2012

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EXAMINER	
LAM, VINH TANG	
ART UNIT	**PAPER NUMBER**
2629	

MAIL DATE	DELIVERY MODE
04/09/2012	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/553,575	GHASSABIAN, BENJAMIN FIROOZ	
	Examiner	Art Unit	
	VINH LAM	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 March 2012*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *1-94* is/are pending in the application.

5a) Of the above claim(s) *1-34,42-43,47,51,53,55-80, & 82-84* is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *35-41,44-46,48-50,52,54,81 and 85-94* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *10/17/2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims **85**, **91**, and **92** are rejected under 35 U.S.C. 102(e) as being anticipated by **Blumberg (US Patent No. 2003/0038735).**

Regarding Claim **85**, (Currently amended) **Blumberg** teaches a data entry system of a device, comprising:

a plurality of input means *([**0115**], FIG. **11**, i.e. **keys**)*, wherein four of the input means are together associated with substantially all of the letters of a language *([**0115**], FIG. **11**)*;

wherein the four input means to which the letters are assigned are arranged in two groups *([**0115**], FIG. **11**, i.e. left (**1&3**) and right (**2&4**))*, two of the four input means in one group and the other two of the four groups in the other group *([**0115**], FIG. **11**, i.e. left (**1&3**) and right (**2&4**))*, wherein the two groups are arranged to be manipulated by two different fingers of a user *([**0115**], FIG. **11**, i.e. left (**1&3**) and right (**2&4**))*, and the

two input means of each group are both arranged to be manipulated by the finger for that group *([0115], FIG. **11**, i.e. left (**1&3**) and right (**2&4**))*,

wherein said two groups comprise a left group *([0248], FIG. **50**, i.e. the five left columns **([0248]**, FIG. **50**, i.e. **ESC, CTRL, F1/F6, F2/F7 & F3/F8**))* and a right group *([0248], FIG. **50**, i.e. the five left columns **([0248]**, FIG. **50**, i.e. **F4/F9, F5/F10, ALT, PAUSE BREAK, & NUM LOCK**))*, left and right corresponding to how the letters would be read if they would appear on said keys *(**[0248]**, FIG. **50**, i.e. **A-Z** as shown on the second to fourth rows)*, and

further comprising a backspace key *(**[0248]**, FIG. **50**, i.e. **BACK SPACE** as shown on the second row and tenth column)* and a space key *(**[0248]**, FIG. **50**, i.e. **SPACE BAR** as shown on the fifth row and both fourth/fifth columns)*, one of which is adjacent said left group and does not extend to said right group and the other of which is adjacent said right group and does not extend to said left group *(**[0248]**, FIG. **50**)*.

Regarding Claim **91**, (Previously presented) **Blumberg** teaches the data entry system according to claim 85, wherein said input means are keys *(**[0115]**, FIG. **11**)*.

Regarding Claim **92**, (Previously presented) **Blumberg** teaches the data entry system according to claim 85, wherein the two groups of the input means are arranged on opposite sides of a surface of an input device *(**[0115]**, FIG. **11**, i.e. left (**1&3**) and right (**2&4**))*.

2. Claim **88** is rejected under 35 U.S.C. 103(a) as being unpatentable over

Blumberg (US Patent No. 2003/0038735).

Regarding Claim **88**, (Currently amended) **Blumberg** teaches the data entry system according to claim 85.

Although **Blumberg** does not explicitly teach said space key and said backspace key are arranged such that the one which is adjacent said left group is further to the left of said left group and the one which is adjacent said right group is further to the right of said right group.

However, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to replace said space key and said backspace key ***([0248]**, FIG. **50)*** are arranged such that the one which is adjacent said left group is further to the left of said left group ***([0154]**, FIG. **26l-26m**, i.e. the unassigned key (e.g. the key in the **1st row and 1st column**)* and the one which is adjacent said right group is further to the right of said right group ***([0154]**, FIG. **26l-26m**, i.e. the unassigned key (e.g. the key in the **1st row and 9th column**) to accommodate user preference so that faster and easier yet more accurate data being inputted.*

3. Claims **86**-**87** and **89-90** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Blumberg (US Patent No. 2003/0038735)** in view of **King et al. (US Patent No. 6011554).**

Regarding Claim **86**, (Previously presented) **Blumberg** teaches the data

entry system according to claim 85.

However, **Blumberg** does not teach that input means are used with a word predictive system using a dictionary of words, wherein upon actuation of at least said input means, the system predicts one or more words from the dictionary.

In the same field of endeavor, **King et al.** teach input means are used with a word predictive system *(Col. **6**, Ln. **17-45**, FIGs. **1A & 1B**, i.e. keyboard disambiguating system **50**)* using a dictionary of words *(Col. **7**, Ln. **19-42**, FIG. **6**, i.e. selection list **76**)*, wherein upon actuation of at least said input means, the system predicts one or more words from the dictionary *(Col. **7**, Ln. **19-42**; Col. **20**, Ln. **1-6**, FIG. **6**, i.e. **done**)*.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine **Blumberg** teaching of a data entry system comprising plurality of input means with **King et al.** teaching of a word predictive system *to provide faster and easier yet more accurate data input*.

Regarding Claim **87**, (Previously presented) the data entry system according to claim 86, wherein **King et al.** teach at least one letter of the predicted word comprises a letter entered precisely by said input means *(Col. **7**, Ln. **19-42**; Col. **20**, Ln. **1-6**, FIG. **6**, i.e. **done**)*.

Regarding Claim **89**, (Previously presented) the data entry system according to claim 85, wherein **Blumberg** teaches the input means of each group forms a column of two letter input means *(**[0115]**, FIG. **11**, i.e. **A** of button **1** and **S** of button **3**)*.

Regarding Claim **90**, (Currently amended) the data entry system according to claim 88, wherein **Blumberg** teaches the backspace key is on a side of a

first column *([**0059**], FIG. **3**, i.e. upper side of character keys **1-3**)* of the input means, and the space key is on a side of a second column *([**0059**], FIG. **3**, i.e. lower side of character keys **4-6**)* of the input means.

4. Claims **35**-**41**, **44**, and **52** are rejected under 35 U.S.C. 103(a) as being unpatentable over **King et al. (US Patent No. 6011554)** in view of **Blumberg (US Patent No. 2003/0038735).**

Regarding Claim **35**, (Currently amended) **King et al.** teach a data entry system, comprising:

an input unit *(Col. **6**, Ln. **16**-**35**, FIG. **1A**, i.e. **50**)* adapted to receive a plurality of first input signals *(Col. **6**, Ln. **16**-**35**, FIG. **1B**, i.e. signals from left two rows of keys **56**)*, wherein at least some of the first input signals *(Col. **6**, Ln. **16**-**35**, FIG. **1B**, i.e. signals from left two rows of keys **56**)* are together associated with substantially all the letters *(Col. **6**, Ln. **16**-**35**, FIG. **1B**, i.e. keys **56** which include letter groups **RPQ, ADF, OLX, EWV,CYK,** and **THJ**)* of a language *(Col. **6**, Ln. **16**-**35**, FIG. **1B**, i.e. English letters)* such that at least one *(Col. **6**, Ln. **16**-**35**, FIG. **1B**, i.e. one of keys **56**)* of the first input signals is associated with more than one letter *(Col. **6**, Ln. **16**-**35**, FIG. **1B**, i.e. top row and left most key which includes at least **RPQ**)*; and

a word predictive system *(Col. **6**, Ln. **17**-**45**, FIGs. **1A & 1B**, i.e. keyboard disambiguating system **50**)* adapted to select a word *(Col. **7**, Ln. **19**-**42**; Col. **20**, Ln. **1**-**6**, FIG. **6**, i.e. **done**)* from a word database *(Col. **7**, Ln. **19**-**42**, FIG. **6**, i.e. selection list **76**)*

responsive to a sequence *(Col. **7**, Ln. **19-42**, i.e. **ADF, OLX, NBZ**, and **EWV**)* of first input signals provided by a user *(Col. **8**, Ln. **15-24**, FIG. **6**)*,

wherein the input unit comprises a plurality of keys representing the first input signals to which the letters are assigned *(Col. **6**, Ln. **16-35**, FIG. **1B**, i.e. keys **56**).*

However, **King et al.** do not explicitly teach that said keys being arranged in two groups, each group is configured for use by a different finger of the user, the left and right groups corresponding to the all the letters, and either the a backspace and a space key being disposed in each group.

In the same field of endeavor, **Blumberg** teaches

said keys being arranged in two groups *([**0115**], FIG. **11**, i.e. left (**1&3**) and right **(2&4)**)*, wherein each group is configured for use by a different finger of the user (*[**0115**], FIG. **11***),

wherein said two groups comprise a left group *([**0248**], FIG. **50**, i.e. the five left columns **([0248]**, FIG. **50**, i.e. **ESC, CTRL, F1/F6, F2/F7 & F3/F8)**)* and a right group *([**0248**], FIG. **50**, i.e. the five left columns **([0248]**, FIG. **50**, i.e. **F4/F9, F5/F10, ALT, PAUSE BREAK, & NUM LOCK)**)*, left and right corresponding to how the letters would be read if they would appear on said keys ***([0248]**, FIG. **50**, i.e. **A-Z** as shown on the second to fourth rows)*, and

further comprising a backspace key ***([0248]**, FIG. **50**, i.e. **BACK SPACE** as shown on the second row and tenth column)* and a space key ***([0248]**, FIG. **50**, i.e. **SPACE BAR** as shown on the fifth row and both fourth/fifth columns)*, one of which is adjacent said left group and does not extend to said right group and the other of which

is adjacent said right group and does not extend to said left group ***([0248]**, FIG. **50**)*.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine **King et al.** teaching of a data entry system comprising plurality of input buttons having word prediction capability with **Blumberg** teaching of said keys being arranged in two groups, each group is configured for use by a different finger of the user, the left and right groups corresponding to the all the letters, and either the a backspace and a space key being disposed in each group *to provide faster and easier data input*.

Regarding Claim **36**, (Previously amended) the system of claim 35, **King et al.** teach comprising:

an output unit *(Col. **20**, Ln. **1-4**, FIG. **6**, i.e. display **53**)* for displaying the selected word *(Col. **20**, Ln. **12-1**, FIG. **6**, e.g. **done**)* to a user; and

wherein the word predictive system is adapted to select a word *(Col. **20**, Ln. **12-1**, FIG. **6**, e.g. **done**)* for a sequence of first input signals *(Col. **7**, Ln. **19-42**, i.e. **ADF** and **OLX**)* by using received second input *(Col. **7**, Ln. **19-42**, i.e. **NBZ**)* that correspond to the letters of the language *(Col. **7**, Ln. **19-42**, i.e. **NBZ,** e.g. **English**)*.

Regarding Claim **37**, (Previously amended) the system of claim 36, wherein the second input unit is adapted to receive speech signals corresponding to the letters of the language which is well-known in the art as “Speech Recognition”.

Regarding Claim **38**, (Previously presented) the system of claim 37, comprising a recognition system which uses the speech signals corresponding to the letters of the alphabet in selecting for first input signals a single letter from the group of

symbols associated with the first signal which is well-known in the art of “Speech Recognition”.

Regarding Claim **39**, (Previously amended) the system of claim 35, wherein **Blumberg** teaches the two groups of keys are located on opposite sides of a device (*[**0115**], FIG. **11**, i.e. **1/3** & **2/4***).

Regarding Claim **40**, (Previously amended) the system of claim 35, wherein **Blumberg** teaches the data entry system comprises four keys *([**0115**], FIG. **11**, i.e. left (**1&3**) and right **(2&4)**)*, each key being used to generate one of the first input signals (*[**0087**]*), all the letters of the language being assigned amongst all of said four keys, and wherein said four keys are operative to disambiguously generate all the letters of the language *([**0115**], FIG. **11**, i.e. left (**1&3**) and right **(2&4)**)*.

Regarding Claim **41**, (Previously amended) the system of claim 40, wherein **Blumberg** teaches the keys of each group are arranged so as to form two columns of keys (*[**0115**], FIG. **11**, i.e. **1/3** & **2/4***).

Regarding Claim **44**, (Previously amended) the system of claim 35, wherein **Blumberg** teaches the at least some of the first input signals are together associated with all the letters of the language *([**0115**], FIG. **11**, i.e. left (**1&3**) and right **(2&4)**)*.

Regarding Claim **45**, (Currently amended) **King et al.** and teach **Blumberg** the system of claim 35.

Although **Blumberg** does not explicitly teach said space key and said backspace key are arranged such that the one which is adjacent said left group is further to the left

of said left group and the one which is adjacent said right group is further to the right of said right group.

However, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to replace said space key and said backspace key *([0248], FIG. **50**)* are arranged such that the one which is adjacent said left group is further to the left of said left group *([0154], FIG. **26l-26m**, i.e. the unassigned key (e.g. the key in the **1st row and 1st column**)* and the one which is adjacent said right group is further to the right of said right group *([0154], FIG. **26l-26m**, i.e. the unassigned key (e.g. the key in the **1st row and 9th column**)*.

Regarding Claim **52**, (Previously presented) the system of claim 35 , wherein **King et al.** teach the letters of the language are assigned *(Col. **6**, Ln. **16-35**, FIG. **1B**, i.e. keys **56** which include letter groups **RPQ, ADF, OLX, EWV,CYK,** and **THJ**)*.

5. Claims **46**, **48-50**, **54**, **81**, and **93-94** are rejected under 35 U.S.C. 103(a) as being unpatentable over **King et al. (US Patent No. 6011554)** in view of **Blumberg (US Patent No. 2003/0038735)** and further in view of **Goren (US Patent No. 7190351).**

Regarding Claim **46**, (Previously amended) the system of claim 40, wherein **King et al.** teach the keys comprise at least one of virtual keys and physical keys *(Col. **6**, Ln. **16-35**, FIG. **1A**)*.

Regarding Claim **48**, (Previously presented) the system of claim 40,

wherein **King et al.** teach different interactions with the keys correspond to different signals (*Col. **6**, Ln. **28-33**, FIG. **1B**, e.g. **1, 4,** and **7…***).

Regarding Claim **49**, (Previously presented) the system of claim 48, wherein **King et al.** teach the keys respond to two different types of interactions, a first type of interaction corresponds to respective ones of the first signals and a second type of interaction corresponds to symbols other than those represented by the first signals (*Col. **6**, Ln. **28-33**, FIG. **1B**, e.g. **1, C, Y,** or **K…**)*.

Regarding Claim **50**, (Previously presented) the system of claim 49, wherein **King et al.** teach the keys are associated with respective ones of the first signals when pressed slightly and with other symbols when pressed heavily *(Col. **6**, Ln. **28-33**, FIG. **1B**, e.g. **1, C, Y,** or **K…**)*.

Regarding Claim **54**, (Previously amended) the system of claim 40, wherein **Goren** teaches the letter keys of each group are arranged so as to form two columns of keys (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **504** & **506**)*.

Regarding Claim **81**, (Previously presented) the system of claim 40, wherein **Goren** teaches the letter keys of each group are arranged so as to form two rows of keys (*Col. **21**, Ln. **19-33**, FIG. **24B**, i.e. **504** & **506**)*.

Regarding Claim **93**, (Previously presented) the data entry system according to claim 85, wherein **Goren** the two groups of the input means are touch screen keys arranged on opposite sides of a screen (*Col. **21**, Ln. **23-44**, FIGs. **24B** & **24C***) of an input device.

Regarding Claim **94**, (Previously presented) the data entry system

according to claim 85, wherein **Goren** the two groups of the input means are separated by at least a portion of a screen (*Col. **21**, Ln. **23-44**, FIGs. **24B** & **24C***) of an input device.

Response to Arguments/Amendments/Remarks

6. Claims **1-34, 42-43, 47, 51, 53, 55-80** are canceled.

7. Claims **82**, **83**, and **84** are withdrawn.

8. Applicant's arguments with respect to newly amended Applicant's arguments filed 03/06/2012 have been fully considered but they are not persuasive.

Applicant argues that the newly amended claims 35 and 85 include additional limitations "…the letters…would appear on said keys, and a backspace and a space key…" that the cited reference(s) do(es) not teach. However, the Examiner respectfully disagrees because the cited reference(s) do(es) teach the newly added limitations. Please see above rejection for detail.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VINH T. LAM whose telephone number is (571)270-3704. The examiner can normally be reached on M-F (7:00-4:30) EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on (571) 272-7674. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Vinh T Lam/
Examiner, Art Unit 2629

/Amare Mengistu/
Supervisory Patent Examiner, Art Unit 2629

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10553575	GHASSABIAN, BENJAMIN FIROOZ
	Examiner	Art Unit
	VINH T LAM	2629

SEARCHED			
Class	Subclass	Date	Examiner
345	156-172	3/31/2009	Vinh Lam

SEARCH NOTES		
Search Notes	Date	Examiner
Search Inventors. No ODP.	7/30/2008	Vinh Lam
Search Internet for synonyms and technical terms.	3/31/2009	Vinh Lam
Search Class/Subclass with 2629 QEM support.	3/31/2009	Vinh Lam
Search EAST for prior arts.	11/22/2011	Vinh Lam
Review Amendments and Arguments	3/30/2012	Vinh Lam

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

/VINH LAM/ Examiner, Art Unit 2629	

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10553575	GHASSABIAN, BENJAMIN FIROOZ
	Examiner	Art Unit
	VINH T LAM	2629

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	07/30/2008	03/31/2009	11/09/2009	04/16/2010	10/30/2010	07/06/2011	11/22/2011	03/30/2012	
	1	÷	N	-	N	-	-	-	-	
	2	÷	N	-	N	-	-	-	-	
	3	÷	N	-	N	-	-	-	-	
	4	÷	N	-	N	-	-	-	-	
	5	÷	N	-	N	-	-	-	-	
	6	÷	N	-	N	-	-	-	-	
	7	÷	N	-	N	-	-	-	-	
	8	÷	N	-	N	-	-	-	-	
	9	÷	N	-	N	-	-	-	-	
	10	÷	N	-	N	-	-	-	-	
	11	÷	N	-	N	-	-	-	-	
	12	÷	N	-	N	-	-	-	-	
	13	÷	N	-	N	-	-	-	-	
	14	÷	N	-	N	-	-	-	-	
	15	÷	N	-	N	-	-	-	-	
	16	÷	N	-	N	-	-	-	-	
	17	÷	N	-	N	-	-	-	-	
	18	÷	N	-	N	-	-	-	-	
	19	÷	N	-	N	-	-	-	-	
	20	÷	N	-	N	-	-	-	-	
	21	÷	N	-	N	-	-	-	-	
	22	÷	N	-	N	-	-	-	-	
	23	÷	N	-	N	-	-	-	-	
	24	÷	✓	-	N	-	-	-	-	
	25	÷	✓	-	N	-	-	-	-	
	26	÷	✓	-	N	-	-	-	-	
	27	÷	✓	-	N	-	-	-	-	
	28	÷	✓	-	N	-	-	-	-	
	29	÷	✓	-	N	-	-	-	-	
	30	÷	✓	-	N	-	-	-	-	
	31	÷	✓	-	N	-	-	-	-	
	32	÷	✓	-	N	-	-	-	-	
	33		✓	-	N	-	-	-	-	
	34		✓	-	N	-	-	-	-	
	35			N	✓	✓	✓	✓	✓	

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10553575	GHASSABIAN, BENJAMIN FIROOZ
	Examiner	Art Unit
	VINH T LAM	2629

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	07/30/2008	03/31/2009	11/09/2009	04/16/2010	10/30/2010	07/06/2011	11/22/2011	03/30/2012	
	36			N	✓	✓	✓	✓	✓	
	37			N	✓	✓	✓	✓	✓	
	38			N	✓	✓	✓	✓	✓	
	39			N	✓	✓	✓	✓	✓	
	40			N	✓	✓	✓	✓	✓	
	41			N	✓	✓	✓	✓	✓	
	42			N	N	-	-	-	-	
	43			N	N	-	-	-	-	
	44			N	✓	✓	✓	✓	✓	
	45			N	✓	✓	✓	✓	✓	
	46			N	✓	✓	✓	✓	✓	
	47			N	✓	✓	-	-	-	
	48			N	✓	✓	✓	✓	✓	
	49			N	✓	✓	✓	✓	✓	
	50			N	✓	✓	✓	✓	✓	
	51			N	✓	✓	-	-	-	
	52			N	✓	✓	✓	✓	✓	
	53			N	✓	-	-	-	-	
	54			N	✓	✓	✓	✓	✓	
	55			N	✓	-	-	-	-	
	56			N	N	-	-	-	-	
	57			N	N	-	-	-	-	
	58			N	N	-	-	-	-	
	59			N	N	-	-	-	-	
	60			N	✓	✓	-	-	-	
	61			N	✓	✓	-	-	-	
	62			N	✓	✓	-	-	-	
	63			N	✓	✓	-	-	-	
	64			N	✓	✓	-	-	-	
	65			N	✓	✓	-	-	-	
	66			N	✓	✓	-	-	-	
	67			N	✓	-	-	-	-	
	68			N	✓	✓	-	-	-	
	69			N	✓	✓	-	-	-	
	70			N	✓	✓	-	-	-	

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10553575	GHASSABIAN, BENJAMIN FIROOZ
	Examiner	**Art Unit**
	VINH T LAM	2629

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	07/30/2008	03/31/2009	11/09/2009	04/16/2010	10/30/2010	07/06/2011	11/22/2011	03/30/2012	
	71			N	✓	✓	-	-	-	
	72			N	✓	✓	-	-	-	
	73			N	✓	✓	-	-	-	
	74				✓	✓	-	-	-	
	75				✓	✓	-	-	-	
	76				✓	✓	-	-	-	
	77				✓	✓	-	-	-	
	78				✓	✓	-	-	-	
	79				✓	✓	-	-	-	
	80				✓	✓	-	-	-	
	81						✓	✓	✓	
	82							N	N	
	83							N	N	
	84							N	N	
	85							✓	✓	
	86							✓	✓	
	87							✓	✓	
	88							✓	✓	
	89							✓	✓	
	90							✓	✓	
	91							✓	✓	
	92							✓	✓	
	93							✓	✓	
	94							✓	✓	

UNITED STATES PATENT AND TRADEMARK OFFICE

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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,575	09/26/2006	Benjamin Firooz Ghassabian	2104-25GHA-US	7464

32964 7590 05/22/2012

DEKEL PATENT LTD., DAVID KLEIN
BEIT HAROF'IM
18 MENUHA VENAHALA STREET, ROOM 27
REHOVOT, 76209
ISRAEL

EXAMINER	
LAM, VINH TANG	
ART UNIT	**PAPER NUMBER**
2629	

MAIL DATE	DELIVERY MODE
05/22/2012	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Applicant-Initiated Interview Summary	**Application No.** 10/553,575	**Applicant(s)** GHASSABIAN, BENJAMIN FIROOZ	
	Examiner VINH LAM	**Art Unit** 2629	

All participants (applicant, applicant's representative, PTO personnel):

(1) *VINH LAM*. (3)_____.

(2) *David Klein*. (4)_____.

Date of Interview: *16 May 2012*.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☐ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☐112 ☒102 ☒103 ☐Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *35 and 85*.

Identification of prior art discussed: *Blumberg (US Patent No. 2003/0038735) & King et al. (US Patent No. 6011554)*.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

Agreement that proposed amendment would overcome prior arts.

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/VINH LAM/ Examiner, Art Unit 2629	

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record
A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews
Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.
All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:
- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:
1) A brief description of the nature of any exhibit shown or any demonstration conducted,
2) an identification of the claims discussed,
3) an identification of the specific prior art discussed,
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
5) a brief identification of the general thrust of the principal arguments presented to the examiner,
   (The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

PTO/SB/30EFS (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	10553575	Filing Date	2006-09-26	Docket Number (if applicable)	2104-25GHA-US	Art Unit	2629
First Named Inventor	Benjamin F. Ghassabian			Examiner Name	Vinh Tang Lam		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

- ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- ☐ Other _____

☒ Enclosed

- ☒ Amendment/Reply
- ☐ Information Disclosure Statement (IDS)
- ☐ Affidavit(s)/ Declaration(s)
- ☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____ (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☐ **The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.**
The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No _____

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

☐ Applicant Signature

PTO/SB/30EFS (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Signature of Registered U.S. Patent Practitioner			
Signature	/David Klein/	Date (YYYY-MM-DD)	2012-06-12
Name	David Klein	Registration Number	41118

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

Applicant	:	Benjamin F. Ghassabian
Appl. No.	:	10/553575
Filed	:	September 26, 2006
Title	:	SYSTEM TO ENHANCE DATA ENTRY IN MOBILE AND FIXED ENVIRONMENT
Group Art Unit:		2629
Examiner	:	Vinh Tang Lam
Docket No.	:	2104-25GHA-US
Confirmation No.:		7464

Honorable Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

AMENDMENT

Sir:

In response to the Office Action of April 9, 2012, please amend the above-identified application as follows:

In the claims:

1-34. (Cancelled)

35. (Currently amended) A data entry system, comprising:

an input unit adapted to receive a plurality of first input signals, wherein at least some of the first input signals are together associated with substantially all the letters of a language such that at least one of the first input signals is associated with more than one letter; and

a word predictive system adapted to select a word from a word database responsive to a sequence of first input signals provided by a user,

wherein the input unit comprises a plurality of keys representing the first input signals to which the letters are assigned, said keys being arranged in two discontinuous groups, wherein each group is configured for use by a different finger of the user, wherein said two groups comprise a left group and a right group, left and right corresponding to how the letters would be read if they would appear on said keys, and

further comprising a backspace key and a space key, one of which is adjacent said left group and does not extend to said right group and the other of which is adjacent said right group and does not extend to said left group.

36. (Previously amended) The system of claim 35, comprising:

an output unit for displaying the selected word to a user; and

wherein the word predictive system is adapted to select a word for a sequence of first input signals by using received second input signals that correspond to the letters of the language.

37. (Previously amended) The system of claim 36, wherein the second input unit is adapted to receive speech signals corresponding to the letters of the language.

38. (Previously presented) The system of claim 37, comprising a recognition system which uses the speech signals corresponding to the letters of the alphabet in selecting for first input signals a single letter from the group of symbols associated with the first signal..

39. (Previously amended) The system of claim 35, wherein the two groups of keys are located on opposite sides of a device.

Samsung Exhibit 1006, Page 991 of 1063

40. (Previously amended) The system of claim 35, wherein the data entry system comprises four keys, each key being used to generate one of the first input signals, all the letters of the language being assigned amongst all of said four keys, and wherein said four keys are operative to disambiguously generate all the letters of the language.

41. (Previously amended) The system of claim 40, wherein the keys of each group are arranged so as to form two columns of keys.

42-43. (Cancelled)

44. (Previously amended) The system of claim 35, wherein the at least some of the first input signals are together associated with all the letters of the language.

45. (Previously amended) The system of claim 35, wherein said space key and said backspace key are arranged such that the one which is adjacent said left group is further to the left of said left group and the one which is adjacent said right group is further to the right of said right group.

46. (Previously amended) The system of claim 40, wherein the keys comprise at least one of virtual keys and physical keys.

47. (Cancelled)

48. (Previously presented) The system of claim 40, wherein different interactions with the keys correspond to different signals.

49. (Previously presented) The system of claim 48, wherein the keys respond to two different types of interactions, a first type of interaction corresponds to respective ones of the first signals and a second type of interaction corresponds to symbols other than those represented by the first signals.

50. (Previously presented) The system of claim 49, wherein the keys are associated with respective ones of the first signals when pressed slightly and with other symbols when pressed heavily.

51. (Cancelled)

52. (Previously amended) The system of claim 35, wherein the letters of the language are assigned to six keys.

53. (Cancelled)

54. (Previously amended) The system of claim 40, wherein the letter keys of each group are arranged so as to form two columns of keys.

55-80. (Cancelled)

81. (Previously presented) The system of claim 40, wherein the letter keys of each group are arranged so as to form two rows of keys.

82-84. (Cancelled)

85. (Currently amended) A data entry system of a device, comprising:

a plurality of input means, wherein four of the input means are together associated with substantially all of the letters of a language;

wherein the four input means to which the letters are assigned are arranged in two discontinuous groups, two of the four input means in one group and the other two of the four groups in the other group, wherein the two groups are arranged to be manipulated by two different fingers of a user, and the two input means of each group are both arranged to be manipulated by the finger for that group, wherein said two groups comprise a left group and a right group, left and right corresponding to how the letters would be read if they would appear on said input means, and

further comprising a backspace key and a space key, one of which is adjacent said left group and does not extend to said right group and the other of which is adjacent said right group and does not extend to said left group.

86. (Previously presented) The data entry system according to claim 85, wherein said input means are used with a word predictive system using a dictionary of words, wherein

upon actuation of at least said input means, the system predicts one or more words from the dictionary.

87. (Previously presented) The data entry system according to claim 86, wherein at least one letter of the predicted word comprises a letter entered precisely by said input means.

88. (Previously amended) The data entry system according to claim 85, wherein said space key and said backspace key are arranged such that the one which is adjacent said left group is further to the left of said left group and the one which is adjacent said right group is further to the right of said right group.

89. (Previously presented) The data entry system according to claim 85, wherein the input means of each group forms a column of two letter input means.

90. (Previously amended) The data entry system according to claim 88, wherein the backspace key is on a side of a first column of the input means, and the space key is on a side of a second column of the input means.

91. (Previously presented) The data entry system according to claim 85, wherein said input means are keys.

92. (Previously presented) The data entry system according to claim 85, wherein the two groups of the input means are arranged on opposite sides of a surface of an input device.

93. (Previously presented) The data entry system according to claim 85, wherein the two groups of the input means are touch screen keys arranged on opposite sides of a screen of an input device.

94. (Previously presented) The data entry system according to claim 85, wherein the two groups of the input means are separated by at least a portion of a screen of an input device.

REMARKS

Applicant has carefully studied the outstanding Official Action mailed on April 9, 2012. This response is intended to be fully responsive to all points of rejection raised by the Examiner and is believed to place the application in condition for allowance. Favorable reconsideration and allowance of the application are respectfully requested.

Claims 85, 91 and 92 stand rejected under 35 USC §102(e) as being anticipated by Blumberg (US 2003/0038735).

Claim 88 stands rejected under 35 USC §103(a) as being unpatentable over Blumberg (US 2003/0038735).

Claims 86, 87, 89 and 90 stand rejected under 35 USC §103(a) as being unpatentable over Blumberg (US 2003/0038735) in view of King et al. (US 6011554).

Claims 35-41, 44 and 52 stand rejected under 35 USC §103(a) as being unpatentable over King et al. (US 6011554) in view of Blumberg (US 2003/0038735).

Claims 45-46, 48-50, 54, 81 and 93-94 stand rejected under 35 USC §103(a) as being unpatentable over King et al. (US 6011554) in view of Blumberg (US 2003/0038735) and further in view of Goren (US 7190351).

Applicant traverses the above rejections. Applicant wishes to express his gratitude to the Examiner for the courtesy of a telephone interview on May 16, 2012, for which the Examiner has sent a summary. It is believed that the amendments to claims 35 and 85 define over Blumberg (US 2003/0038735) and place the application in a condition for allowance.

Accordingly, claims 35-41, 44-46, 48-50, 52, 54, and 81-94 are respectfully deemed allowable. Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,
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Electronic Patent Application Fee Transmittal	
Application Number:	10553575
Filing Date:	26-Sep-2006
Title of Invention:	Systems to enhance data entry in mobile and fixed environment
First Named Inventor/Applicant Name:	Benjamin Firooz Ghassabian
Filer:	David L. Klein
Attorney Docket Number:	2104-25GHA-US
Filed as Small Entity	

U.S. National Stage under 35 USC 371 Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Request for continued examination	2801	1	465	465
		Total in USD ($)		**465**

Electronic Acknowledgement Receipt	
EFS ID:	12990095
Application Number:	10553575
International Application Number:	
Confirmation Number:	7464
Title of Invention:	Systems to enhance data entry in mobile and fixed environment
First Named Inventor/Applicant Name:	Benjamin Firooz Ghassabian
Customer Number:	32964
Filer:	David L. Klein
Filer Authorized By:	
Attorney Docket Number:	2104-25GHA-US
Receipt Date:	12-JUN-2012
Filing Date:	26-SEP-2006
Time Stamp:	12:25:35
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$465
RAM confirmation Number	9551
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Request for Continued Examination (RCE)	RCE_jun2012.pdf	95843 52cdc045abad544b97b69284170b20f073f47f5e	no	3
Warnings:					
This is not a USPTO supplied RCE SB30 form.					
Information:					
2	Amendment After Final	2104-25GHA-US-jun12_usr.pdf	41046 5224991ee843ec3290f52003f135493d20ad7d85	no	6
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30188 2f50d548a5c91d483cefab7634eca22dfe7303ee	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	167077		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 10/553,575	Filing Date 09/26/2006	☐ To be Mailed

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)	SMALL ENTITY ☒		OR	OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	06/12/2012	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 26	Minus	** 40	= 0	X $30 =	0	OR	X $ =	
	Independent (37 CFR 1.16(h))	* 2	Minus	***5	= 0	X $125 =	0	OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE	0	OR	TOTAL ADD'L FEE	

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/ALLYSON PURNELL/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,575	09/26/2006	Benjamin Firooz Ghassabian	2104-25GHA-US	7464

32964 7590 11/06/2012

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EXAMINER	
LAM, VINH TANG	
ART UNIT	**PAPER NUMBER**
2695	

MAIL DATE	DELIVERY MODE
11/06/2012	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/553,575	GHASSABIAN, BENJAMIN FIROOZ	
	Examiner	Art Unit	
	VINH LAM	2695	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 June 2012*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *1-94* is/are pending in the application.

5a) Of the above claim(s) *1-34,42,43,47,51,53,55-80 and 82-84* is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *35-41,44-46,48,50,52,54,81 and 85-94* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *10/17/2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims **85**, **88**, **91**,and **92** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Blumberg (US Patent No. 2003/0038735)** in view of **He (US Patent No. 2003/0048205)**.

Regarding Claim **85**, (Currently amended) **Blumberg** teaches a data entry system of a device, comprising:

a plurality of input means *([**0115**], FIG. **11**, i.e. **keys**)*, wherein four of the input means are together associated with substantially all of the letters of a language *([**0115**], FIG. **11**)*;

wherein the four input means to which the letters are assigned are arranged in two discontinuous groups *([**0115**], FIG. **11**, i.e. left (**1&3**) and right (**2&4**))*, two of the four input means in one group and the other two of the four groups in the other group *([**0115**], FIG. **11**, i.e. left (**1&3**) and right (**2&4**))*, wherein the two groups are arranged to

be manipulated by two different fingers of a user *([**0115**], FIG. **11**, i.e. left (**1&3**) and right (**2&4**))*, and the two input means of each group are both arranged to be manipulated by the finger for that group *([**0115**], FIG. **11**, i.e. left (**1&3**) and right (**2&4**))*, wherein said two groups comprise a left group *([**0248**], FIG. **50**, i.e. the five left columns ([**0248**], FIG. **50**, i.e. **ESC, CTRL, F1/F6, F2/F7 & F3/F8**))* and a right group *([**0248**], FIG. **50**, i.e. the five left columns ([**0248**], FIG. **50**, i.e. **F4/F9, F5/F10, ALT, PAUSE BREAK, & NUM LOCK**))*, left and right corresponding to how the letters would be read if they would appear on said keys *([**0248**], FIG. **50**, i.e. **A-Z** as shown on the second to fourth rows)*.

However, **Blumberg** does not teach further comprising a backspace key and a space key, one of which is adjacent said left group and does not extend to said right group and the other of which is adjacent said right group and does not extend to said left group.

In the same field of endeavor, **He** teaches

further comprising a backspace key *([**0066**], FIG. **4**, i.e. **B-SPACE** as shown on the second row and second column of 403)* and a space key *([**0066**], FIG. **4**, i.e. **SPACE** as shown on the first row and second column of 402)*, one of which is adjacent said left group and does not extend to said right group *([**0066**], FIG. **4**, i.e. **SPACE** as shown on the first row and second column of 402)* and the other of which is adjacent said right group and does not extend to said left group *([**0066**], FIG. **4**, i.e. **B-SPACE** as shown on the second row and second column of 403)*.

It would have been obvious to a person having ordinary skill in the art at the time

the invention was made to modify **Blumberg** teaching of a data entry system of a device comprising a plurality of input means wherein four of the input means are together associated with substantially all of the letters of a language and wherein the four input means to which the letters are assigned are arranged in two discontinuous groups for use with fingers of both hands with **He** teaching of a backspace key and a space key, one of which is adjacent said left group and does not extend to said right group and the other of which is adjacent said right group and does not extend to said left group *to improve the speed of data entry of the device user input.*

Regarding Claim **88**, (Currently amended) the data entry system according to claim 85, wherein **He** teaches said space key and said backspace key are arranged such that the one which is adjacent said left group is further to the left of said left group and the one which is adjacent said right group is further to the right of said right group ***([0066]**, FIG. **4**)*.

Regarding Claim **91**, (Previously presented) the data entry system according to claim 85, wherein **Blumberg** teaches said input means are keys *([**0115**], FIG. **11**)*.

Regarding Claim **92**, (Previously presented) the data entry system according to claim 85, wherein **Blumberg** teaches the two groups of the input means are arranged on opposite sides of a surface of an input device *([**0115**], FIG. **11**, i.e. left (**1&3**) and right **(2&4)**)*.

2. Claims **86**-**87** and **89-90** are rejected under 35 U.S.C. 103(a) as being

unpatentable over **Blumberg (US Patent No. 2003/0038735)** in view of **He (US Patent No. 2003/0048205)** and further in view of **King et al. (US Patent No. 6011554).**

Regarding Claim **86**, (Previously presented) **Blumberg** and **He** teach the data entry system according to claim 85.

However, **Blumberg** and **He** do not teach that input means are used with a word predictive system using a dictionary of words, wherein upon actuation of at least said input means, the system predicts one or more words from the dictionary.

In the same field of endeavor, **King et al.** teach input means are used with a word predictive system *(Col. **6**, Ln. **17-45**, FIGs. **1A & 1B**, i.e. keyboard disambiguating system **50**)* using a dictionary of words *(Col. **7**, Ln. **19-42**, FIG. **6**, i.e. selection list **76**)*, wherein upon actuation of at least said input means, the system predicts one or more words from the dictionary *(Col. **7**, Ln. **19-42**; Col. **20**, Ln. **1-6**, FIG. **6**, i.e. **done**)*.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine **Blumberg** and **He** teaching of a data entry system comprising plurality of input means with **King et al.** teaching of a word predictive system *to provide faster and easier yet more accurate data input*.

Regarding Claim **87**, (Previously presented) the data entry system according to claim 86, wherein **King et al.** teach at least one letter of the predicted word comprises a letter entered precisely by said input means *(Col. **7**, Ln. **19-42**; Col. **20**, Ln. **1-6**, FIG. **6**, i.e. **done**)*.

Regarding Claim **89**, (Previously presented) the data entry system

according to claim 85, wherein **Blumberg** teaches the input means of each group forms a column of two letter input means *([**0115**], FIG. **11**, i.e. **A** of button **1** and **S** of button **3**)*.

Regarding Claim **90**, (Currently amended) the data entry system according to claim 88, wherein **Blumberg** teaches the backspace key is on a side of a first column *([**0059**], FIG. **3**, i.e. upper side of character keys **1-3**)* of the input means, and the space key is on a side of a second column *([**0059**], FIG. **3**, i.e. lower side of character keys **4-6**)* of the input means.

3. Claims **35-41**, **44-46**, **48-50**, **52**, **54**, and **81** are rejected under 35 U.S.C. 103(a) as being unpatentable over **King et al. (US Patent No. 6011554)** in view of **Blumberg (US Patent No. 2003/0038735)** and further in view of **He (US Patent No. 2003/0048205).**

Regarding Claim **35**, (Currently amended) **King et al.** teach a data entry system, comprising:

an input unit *(Col. **6**, Ln. **16-35**, FIG. **1A**, i.e. **50**)* adapted to receive a plurality of first input signals *(Col. **6**, Ln. **16-35**, FIG. **1B**, i.e. signals from left two rows of keys **56**)*, wherein at least some of the first input signals *(Col. **6**, Ln. **16-35**, FIG. **1B**, i.e. signals from left two rows of keys **56**)* are together associated with substantially all the letters *(Col. **6**, Ln. **16-35**, FIG. **1B**, i.e. keys **56** which include letter groups **RPQ, ADF, OLX, EWV,CYK,** and **THJ**)* of a language *(Col. **6**, Ln. **16-35**, FIG. **1B**, i.e. English letters)* such that at least one *(Col. **6**, Ln. **16-35**, FIG. **1B**, i.e. one of keys **56**)* of the first input signals

is associated with more than one letter *(Col. **6**, Ln. **16-35**, FIG. **1B**, i.e. top row and left most key which includes at least **RPQ**)*; and

a word predictive system *(Col. **6**, Ln. **17-45**, FIGs. **1A & 1B**, i.e. keyboard disambiguating system **50**)* adapted to select a word *(Col. **7**, Ln. **19-42**; Col. **20**, Ln. **1-6**, FIG. **6**, i.e. **done**)* from a word database *(Col. **7**, Ln. **19-42**, FIG. **6**, i.e. selection list **76**)* responsive to a sequence *(Col. **7**, Ln. **19-42**, i.e. **ADF, OLX, NBZ**, and **EWV**)* of first input signals provided by a user *(Col. **8**, Ln. **15-24**, FIG. **6**)*,

wherein the input unit comprises a plurality of keys representing the first input signals to which the letters are assigned *(Col. **6**, Ln. **16-35**, FIG. **1B**, i.e. keys **56**)*.

However, **King et al.** do not explicitly teach that said keys being arranged in two discontinuous groups, each group is configured for use by a different finger of the user, the left and right groups corresponding to the all the letters, and either the a backspace and a space key being disposed in each group.

In the same field of endeavor, **Blumberg** teaches

said keys being arranged in two discontinuous groups *([**0115**], FIG. **11**, i.e. left (**1&3**) and right (**2&4**))*, wherein each group is configured for use by a different finger of the user (*[**0115**], FIG. **11***),

wherein said two groups comprise a left group *([**0248**], FIG. **50**, i.e. the five left columns (**[0248]**, FIG. **50**, i.e. **ESC, CTRL, F1/F6, F2/F7 & F3/F8**))* and a right group *([**0248**], FIG. **50**, i.e. the five left columns (**[0248]**, FIG. **50**, i.e. **F4/F9, F5/F10, ALT, PAUSE BREAK, & NUM LOCK**))*, left and right corresponding to how the letters would be read if they would appear on said keys *(**[0248]**, FIG. **50**, i.e. **A-Z** as shown on the*

second to fourth rows).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine **King et al.** teaching of a data entry system comprising plurality of input buttons having word prediction capability with **Blumberg** teaching of said keys being arranged in two groups, each group is configured for use by a different finger of the user, the left and right groups corresponding to the all the letters, and either the a backspace and a space key being disposed in each group *to provide faster and easier data input*.

However, **King et al.** and **Blumberg** do not explicitly teach further comprising a backspace key and a space key, one of which is adjacent said left group and does not extend to said right group and the other of which is adjacent said right group and does not extend to said left group.

In the same field of endeavor, **He** teaches

further comprising a backspace key ***([0066]**, FIG. **4**, i.e. **B-SPACE** as shown on the second row and second column of 403)* and a space key ***([0066]**, FIG. **4**, i.e. **SPACE** as shown on the first row and second column of 402)*, one of which is adjacent said left group and does not extend to said right group ***([0066]**, FIG. **4**, i.e. **SPACE** as shown on the first row and second column of 402)* and the other of which is adjacent said right group and does not extend to said left group ***([0066]**, FIG. **4**, i.e. **B-SPACE** as shown on the second row and second column of 403)*.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify **King et al.** and **Blumberg** teaching of a data entry

system of a device comprising a plurality of input means wherein four of the input means are together associated with substantially all of the letters of a language, a word predictive system, and wherein the four input means to which the letters are assigned are arranged in two discontinuous groups for use with fingers of both hands with **He** teaching of a backspace key and a space key, one of which is adjacent said left group and does not extend to said right group and the other of which is adjacent said right group and does not extend to said left group *to improve the speed of data entry of the device user input.*

Regarding Claim **36**, (Previously amended) the system of claim 35, **King et al.** teach comprising:

an output unit *(Col. **20**, Ln. **1-4**, FIG. **6**, i.e. display **53**)* for displaying the selected word *(Col. **20**, Ln. **12-1**, FIG. **6**, e.g. **done**)* to a user; and

wherein the word predictive system is adapted to select a word *(Col. **20**, Ln. **12-1**, FIG. **6**, e.g. **done**)* for a sequence of first input signals *(Col. **7**, Ln. **19-42**, i.e. **ADF** and **OLX**)* by using received second input *(Col. **7**, Ln. **19-42**, i.e. **NBZ**)* that correspond to the letters of the language *(Col. **7**, Ln. **19-42**, i.e. **NBZ,** e.g. **English**)*.

Regarding Claim **37**, (Previously amended) the system of claim 36, wherein the second input unit is adapted to receive speech signals corresponding to the letters of the language which is well-known in the art as “Speech Recognition”.

Regarding Claim **38**, (Previously presented) the system of claim 37, comprising a recognition system which uses the speech signals corresponding to the letters of the alphabet in selecting for first input signals a single letter from the group of

symbols associated with the first signal which is well-known in the art of “Speech Recognition”.

Regarding Claim **39**, (Previously amended) the system of claim 35, wherein **Blumberg** teaches the two groups of keys are located on opposite sides of a device (*[**0115**], FIG. **11**, i.e. **1/3** & **2/4***).

Regarding Claim **40**, (Previously amended) the system of claim 35, wherein **Blumberg** teaches the data entry system comprises four keys *([**0115**], FIG. **11**, i.e. left (**1&3**) and right **(2&4)**)*, each key being used to generate one of the first input signals (*[**0087**]*), all the letters of the language being assigned amongst all of said four keys, and wherein said four keys are operative to disambiguously generate all the letters of the language *([**0115**], FIG. **11**, i.e. left (**1&3**) and right **(2&4)**)*.

Regarding Claim **41**, (Previously amended) the system of claim 40, wherein **Blumberg** teaches the keys of each group are arranged so as to form two columns of keys (*[**0115**], FIG. **11**, i.e. **1/3** & **2/4***).

Regarding Claim **44**, (Previously amended) the system of claim 35, wherein **Blumberg** teaches the at least some of the first input signals are together associated with all the letters of the language *([**0115**], FIG. **11**, i.e. left (**1&3**) and right **(2&4)**)*.

Regarding Claim **45**, (Currently amended) the system of claim 35, wherein **He** teaches said space key and said backspace key are arranged such that the one which is adjacent said left group is further to the left of said left group and the one which is adjacent said right group is further to the right of said right group ***([0066], FIG. 4)***.

Regarding Claim **46**, (Previously amended) the system of claim 40, wherein **King et al.** teach the keys comprise at least one of virtual keys and physical keys *(Col. **6**, Ln. **16-35**, FIG. **1A**)*.

Regarding Claim **48**, (Previously presented) the system of claim 40, wherein **King et al.** teach different interactions with the keys correspond to different signals (*Col. **6**, Ln. **28-33**, FIG. **1B**, e.g. **1, 4,** and **7…***).

Regarding Claim **49**, (Previously presented) the system of claim 48, wherein **King et al.** teach the keys respond to two different types of interactions, a first type of interaction corresponds to respective ones of the first signals and a second type of interaction corresponds to symbols other than those represented by the first signals (*Col. **6**, Ln. **28-33**, FIG. **1B**, e.g. **1, C, Y,** or **K…**)*.

Regarding Claim **50**, (Previously presented) the system of claim 49, wherein **King et al.** teach the keys are associated with respective ones of the first signals when pressed slightly and with other symbols when pressed heavily *(Col. **6**, Ln. **28-33**, FIG. **1B**, e.g. **1, C, Y,** or **K…**)*.

Regarding Claim **52**, (Previously presented) the system of claim 35 , wherein **King et al.** teach the letters of the language are assigned *(Col. **6**, Ln. **16-35**, FIG. **1B**, i.e. keys **56** which include letter groups **RPQ, ADF, OLX, EWV,CYK,** and **THJ**)*.

Regarding Claim **54**, (Previously amended) the system of claim 40, wherein **Blumberg** teaches the letter keys of each group are arranged so as to form two columns of keys *(**[0115]**, FIG. **11**, i.e. left **(1&3)** and right **(2&4)**)*.

Regarding Claim **81**, (Previously presented) the system of claim 40, wherein **Blumberg** teaches the letter keys of each group are arranged so as to form two rows of keys *([**0115**], FIG. **11**, i.e. top (**1&2**) and bottom **(3&4)**)*.

4. Claims **93**-**94** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Blumberg (US Patent No. 2003/0038735)** in view of **He (US Patent No. 2003/0048205)** and further in view of **Goren (US Patent No. 7190351).**

Regarding Claim **93**, (Previously presented) **Blumberg** and **He** teach the data entry system according to claim 85.

However, **Blumberg** and **He** do not explicitly teach the two groups of the input means are touch screen keys arranged on opposite sides of a screen

In the same field of endeavor, **Goren** teaches the two groups of the input means are touch screen keys arranged on opposite sides of a screen (*Col. **21**, Ln. **23**-**44**, FIGs. **24B** & **24C***) of an input device.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modified **Blumberg** and **He** teaching of a data entry system of a device comprising a plurality of input means wherein four of the input means are together associated with substantially all of the letters of a language and wherein the four input means to which the letters are assigned are arranged in two discontinuous groups for use with fingers of both hands, a backspace key and a space key being on each side of the groups with **Goren** teaching of two groups of the input means are touch

screen keys arranged on opposite sides of a screen *to enhance user input/output interface for a device having a touch screen.*

Regarding Claim **94**, (Previously presented) **Blumberg** and **He** teach the data entry system according to claim 85.

However, **Blumberg** and **He** do not explicitly teach the two groups of the input means are separated by at least a portion of a screen.

In the same field of endeavor, **Goren** teaches the two groups of the input means are separated by at least a portion of a screen (*Col. **21**, Ln. **23-44**, FIGs. **24B** & **24C***) of an input device.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modified **Blumberg** and **He** teaching of a data entry system of a device comprising a plurality of input means wherein four of the input means are together associated with substantially all of the letters of a language and wherein the four input means to which the letters are assigned are arranged in two discontinuous groups for use with fingers of both hands, a backspace key and a space key being on each side of the groups with **Goren** teaching of the two groups of the input means are separated by at least a portion of a screen *to enhance user input/output interface for a device having a touch screen.*

Response to Arguments/Amendments/Remarks

5. Claims **1-34, 42-43, 47, 51, 53, 55-80** are canceled.

6. Claims **82-84** are withdrawn.

7. Applicant's arguments with respect to claims 35 and 85 have been considered but are moot because the arguments do not apply to any of the references being used in the current rejection.

Conclusion

The prior art(s) made of record and not relied upon (is)/are considered pertinent to applicant's disclosure: Please see PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VINH T. LAM whose telephone number is (571) 270-3704. The examiner can normally be reached on M-F (7:00-4:30) EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on (571) 272-7674. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

/VINH LAM/

Examiner, Art Unit 2695

/Amare Mengistu/

Supervisory Patent Examiner, Art Unit 2695

Notice of References Cited	Application/Control No. 10/553,575	Applicant(s)/Patent Under Reexamination GHASSABIAN, BENJAMIN FIR	
	Examiner VINH LAM	Art Unit 2695	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-6,011,554 A	01-2000	King et al.	715/811
*	B	US-6,356,866 B1	03-2002	Pratley et al.	704/9
*	C	US-6,359,572 B1	03-2002	Vale, Peter O.	341/23
*	D	US-2003/0038735 A1	02-2003	Blumberg, Marvin R.	341/22
*	E	US-2003/0048205 A1	03-2003	He, Junru	341/26
*	F	US-7,190,351 B1	03-2007	Goren, Michael	345/173
*	G	US-7,218,249 B2	05-2007	Chadha, Lovleen	341/23
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10553575	GHASSABIAN, BENJAMIN FIROOZ
	Examiner	Art Unit
	VINH T LAM	2695

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	07/30/2008	03/31/2009	11/09/2009	04/16/2010	10/30/2010	07/06/2011	11/22/2011	03/30/2012	10/18/2012
	1	÷	N	-	N	-	-	-	-	-
	2	÷	N	-	N	-	-	-	-	-
	3	÷	N	-	N	-	-	-	-	-
	4	÷	N	-	N	-	-	-	-	-
	5	÷	N	-	N	-	-	-	-	-
	6	÷	N	-	N	-	-	-	-	-
	7	÷	N	-	N	-	-	-	-	-
	8	÷	N	-	N	-	-	-	-	-
	9	÷	N	-	N	-	-	-	-	-
	10	÷	N	-	N	-	-	-	-	-
	11	÷	N	-	N	-	-	-	-	-
	12	÷	N	-	N	-	-	-	-	-
	13	÷	N	-	N	-	-	-	-	-
	14	÷	N	-	N	-	-	-	-	-
	15	÷	N	-	N	-	-	-	-	-
	16	÷	N	-	N	-	-	-	-	-
	17	÷	N	-	N	-	-	-	-	-
	18	÷	N	-	N	-	-	-	-	-
	19	÷	N	-	N	-	-	-	-	-
	20	÷	N	-	N	-	-	-	-	-
	21	÷	N	-	N	-	-	-	-	-
	22	÷	N	-	N	-	-	-	-	-
	23	÷	N	-	N	-	-	-	-	-
	24	÷	✓	-	N	-	-	-	-	-
	25	÷	✓	-	N	-	-	-	-	-
	26	÷	✓	-	N	-	-	-	-	-
	27	÷	✓	-	N	-	-	-	-	-
	28	÷	✓	-	N	-	-	-	-	-
	29	÷	✓	-	N	-	-	-	-	-
	30	÷	✓	-	N	-	-	-	-	-
	31	÷	✓	-	N	-	-	-	-	-
	32	÷	✓	-	N	-	-	-	-	-
	33		✓	-	N	-	-	-	-	-
	34		✓	-	N	-	-	-	-	-
	35			N	✓	✓	✓	✓	✓	✓

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10553575	GHASSABIAN, BENJAMIN FIROOZ
	Examiner	**Art Unit**
	VINH T LAM	2695

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	07/30/2008	03/31/2009	11/09/2009	04/16/2010	10/30/2010	07/06/2011	11/22/2011	03/30/2012	10/18/2012
	36			N	✓	✓	✓	✓	✓	✓
	37			N	✓	✓	✓	✓	✓	✓
	38			N	✓	✓	✓	✓	✓	✓
	39			N	✓	✓	✓	✓	✓	✓
	40			N	✓	✓	✓	✓	✓	✓
	41			N	✓	✓	✓	✓	✓	✓
	42			N	N	-	-	-	-	-
	43			N	N	-	-	-	-	-
	44			N	✓	✓	✓	✓	✓	✓
	45			N	✓	✓	✓	✓	✓	✓
	46			N	✓	✓	✓	✓	✓	✓
	47			N	✓	✓	-	-	-	-
	48			N	✓	✓	✓	✓	✓	✓
	49			N	✓	✓	✓	✓	✓	✓
	50			N	✓	✓	✓	✓	✓	✓
	51			N	✓	✓	-	-	-	-
	52			N	✓	✓	✓	✓	✓	✓
	53			N	✓	-	-	-	-	-
	54			N	✓	✓	✓	✓	✓	✓
	55			N	✓	-	-	-	-	-
	56			N	N	-	-	-	-	-
	57			N	N	-	-	-	-	-
	58			N	N	-	-	-	-	-
	59			N	N	-	-	-	-	-
	60			N	✓	✓	-	-	-	-
	61			N	✓	✓	-	-	-	-
	62			N	✓	✓	-	-	-	-
	63			N	✓	✓	-	-	-	-
	64			N	✓	✓	-	-	-	-
	65			N	✓	✓	-	-	-	-
	66			N	✓	✓	-	-	-	-
	67			N	✓	-	-	-	-	-
	68			N	✓	✓	-	-	-	-
	69			N	✓	✓	-	-	-	-
	70			N	✓	✓	-	-	-	-

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10553575	GHASSABIAN, BENJAMIN FIROOZ
	Examiner	**Art Unit**
	VINH T LAM	2695

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	07/30/2008	03/31/2009	11/09/2009	04/16/2010	10/30/2010	07/06/2011	11/22/2011	03/30/2012	10/18/2012
	71			N	✓	✓	-	-	-	-
	72			N	✓	✓	-	-	-	-
	73			N	✓	✓	-	-	-	-
	74				✓	✓	-	-	-	-
	75				✓	✓	-	-	-	-
	76				✓	✓	-	-	-	-
	77				✓	✓	-	-	-	-
	78				✓	✓	-	-	-	-
	79				✓	✓	-	-	-	-
	80				✓	✓	-	-	-	-
	81						✓	✓	✓	✓
	82							N	N	N
	83							N	N	N
	84							N	N	N
	85							✓	✓	✓
	86							✓	✓	✓
	87							✓	✓	✓
	88							✓	✓	✓
	89							✓	✓	✓
	90							✓	✓	✓
	91							✓	✓	✓
	92							✓	✓	✓
	93							✓	✓	✓
	94							✓	✓	✓

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10553575	GHASSABIAN, BENJAMIN FIROOZ
	Examiner	Art Unit
	VINH T LAM	2695

SEARCHED			
Class	Subclass	Date	Examiner
345	156-172	3/31/2009	Vinh Lam
341	22	10/18/2012	

SEARCH NOTES		
Search Notes	Date	Examiner
Search Inventors. No ODP.	7/30/2008	Vinh Lam
Search Internet for synonyms and technical terms.	3/31/2009	Vinh Lam
Search Class/Subclass with 2629 QEM support.	3/31/2009	Vinh Lam
Search EAST for prior arts.	10/18/2012	Vinh Lam
Review Amendments and Arguments	10/18/2012	Vinh Lam

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

/VINH LAM/ Examiner, Art Unit 2695	

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

Applicant	:	Benjamin F. Ghassabian
Appl. No.	:	10/553575
Filed	:	September 26, 2006
Title	:	SYSTEM TO ENHANCE DATA ENTRY IN MOBILE AND FIXED ENVIRONMENT
Group Art Unit:		2629
Examiner	:	Vinh Tang Lam
Docket No.	:	2104-25GHA-US
Confirmation No.:		7464

Honorable Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

AMENDMENT

Sir:

In response to the Office Action of November 6, 2012, please amend the above-identified application as follows:

In the claims:

1-34. (Cancelled)

35. (Currently amended) A data entry system, comprising:

an input unit adapted to receive a plurality of first input signals, wherein at least some of the first input signals are together associated with substantially all the letters of a language such that at least one of the first input signals is associated with more than one letter; and

a word predictive system adapted to select a word from a word database responsive to a sequence of first input signals provided by a user,

wherein the input unit comprises a plurality of four keys representing the first input signals to which the letters are assigned, said keys being arranged in two groups, wherein the keys of each group are discontinuous from the keys of the other group. ~~is configured for use by a different finger of the user, wherein said two groups comprise a left group and a right group, left and right corresponding to how the letters would be read if they would appear on said keys, and~~

~~wherein comprising a backspace key and a space key, one of which is adjacent said left group and does not extend to said right group and the other of which is adjacent said right group and does not extend to said left group.~~

36. (Previously amended) The system of claim 35, comprising:

an output unit for displaying the selected word to a user; and

wherein the word predictive system is adapted to select a word for a sequence of first input signals by using received second input signals that correspond to the letters of the language.

37. (Previously amended) The system of claim 36, wherein the second input unit is adapted to receive speech signals corresponding to the letters of the language.

38. (Previously presented) The system of claim 37, comprising a recognition system which uses the speech signals corresponding to the letters of the alphabet in selecting for first input signals a single letter from the group of symbols associated with the first signal..

39. (Previously amended) The system of claim 35, wherein the two groups of keys are located on opposite sides of a device.

Samsung Exhibit 1006, Page 1022 of 1063

40. (Previously amended) The system of claim 35, wherein the data entry system comprises four keys, each key being used to generate one of the first input signals, all the letters of the language being assigned amongst all of said four keys, and wherein said four keys are operative to disambiguously generate all the letters of the language.

41. (Previously amended) The system of claim 40, wherein the keys of each group are arranged so as to form two columns of keys.

42-43. (Cancelled)

44. (Previously amended) The system of claim 35, wherein the at least some of the first input signals are together associated with all the letters of the language.

45. (~~Previously Currently~~ amended) The system of claim 35, wherein said space key and said backspace key are arranged such that the one which is adjacent said left group is further to the left of said left group and the one which is adjacent said right group is further to the right of said right group.

46. (Previously amended) The system of claim 40, wherein the keys comprise at least one of virtual keys and physical keys.

47. (Cancelled)

48. (Previously presented) The system of claim 40, wherein different interactions with the keys correspond to different signals.

49. (Previously presented) The system of claim 48, wherein the keys respond to two different types of interactions, a first type of interaction corresponds to respective ones of the first signals and a second type of interaction corresponds to symbols other than those represented by the first signals.

50. (Previously presented) The system of claim 49, wherein the keys are associated with respective ones of the first signals when pressed slightly and with other symbols when pressed heavily.

51. (Cancelled)

52. (Previously amended) The system of claim 35, wherein the letters of the language are assigned to six keys.

53. (Cancelled)

54. (Previously amended) The system of claim 40, wherein the letter keys of each group are arranged so as to form two columns of keys.

55-80. (Cancelled)

81. (Previously presented) The system of claim 40, wherein the letter keys of each group are arranged so as to form two rows of keys.

82. (Withdrawn) A data entry system, comprising:

an input unit adapted to receive a plurality of first input signals, wherein at least some of the first input signals are together associated with substantially all the letters of a language such that at least one of the first input signals is associated with more than one letter; and

a word predictive system adapted to select a word from a word database responsive to a sequence of first input signals provided by a user,

wherein the input unit comprises a plurality of keys representing the first input signals to which the letters are assigned, said keys being arranged in two groups, wherein each group is configured for use by a different finger of the user, and wherein at least one of said letters are associated with at least one of said keys based on a shape of said at least one of said letters.

83. (Withdrawn) A data entry system, comprising:

an input unit adapted to receive a plurality of first input signals, wherein at least some of the first input signals are together associated with substantially all the letters of a language such that at least one of the first input signals is associated with more than one letter,

wherein the input unit comprises a plurality of keys representing the first input signals to which the letters are assigned, said keys being arranged in two groups, wherein each group is configured for use by a different finger of the user; and

a word predictive system adapted to select a word from a word database responsive to a sequence of first input signals provided by a user combined with a behavior of the user.

84. (Withdrawn) The system of claim 83, wherein said behavior of the user comprises movement of said user towards a desired symbol.

85. (Currently amended) A data entry system of a device, comprising:

~~a plurality of input means, wherein~~ four ~~of the~~ input means ~~are together~~ associated with ~~substantially all of~~ the letters of a language such that each of the input means includes a plurality of letters;

wherein the four input means to which the letters are assigned are arranged in two groups, two of the four input means in one group and the other two of the four input means groups in the other group~~, wherein the two groups are arranged to be manipulated by two different fingers of a user, and the two input means of each group are both arranged to be manipulated by the finger for that group~~, wherein said two groups are located on opposite sides of a touch screen~~comprise a left group and a right group, left and right corresponding to how the letters would be read if they would appear on said input means~~, and

~~further comprising a backspace key and a space key, one of which is adjacent said left group and does not extend to said right group and the other of which is adjacent said right group and does not extend to said left group~~wherein said data system further comprises a word predictive system adapted to select a word from a word database responsive to a sequence of input signals provided by said input means.

86. (Previously presented) The data entry system according to claim 85, wherein said input means are used with a word predictive system using a dictionary of words, wherein upon actuation of at least said input means, the system predicts one or more words from the dictionary.

Samsung Exhibit 1006, Page 1025 of 1063

87. (Previously presented) The data entry system according to claim 86, wherein at least one letter of the predicted word comprises a letter entered precisely by said input means.

88. (Previously ~~Currently~~ amended) The data entry system according to claim 85, wherein said space key and said backspace key are arranged such that the one which is adjacent said left group is further to the left of said left group and the one which is adjacent said right group is further to the right of said right group.

89. (Previously presented) The data entry system according to claim 85, wherein the input means of each group forms a column of two letter input means.

90. (Previously ~~Currently~~ amended) The data entry system according to claim 88, wherein the backspace key is on a side of a first column of the input means, and the space key is on a side of a second column of the input means.

91. (Previously presented) The data entry system according to claim 85, wherein said input means are keys.

92. (Previously presented) The data entry system according to claim 85, wherein the two groups of the input means are arranged on opposite sides of a surface of an input device.

93. (Previously presented) The data entry system according to claim 85, wherein the two groups of the input means are touch screen keys arranged on opposite sides of a screen of an input device.

94. (Previously presented) The data entry system according to claim 85, wherein the two groups of the input means are separated by at least a portion of a screen of an input device.

REMARKS

Applicant has carefully studied the outstanding Official Action mailed on November 6, 2012. This response is intended to be fully responsive to all points of rejection raised by the Examiner and is believed to place the application in condition for allowance. Favorable reconsideration and allowance of the application are respectfully requested.

The examiner cites the basis of objection, namely 35 U.S.C. 103(a) concerning obviousness rejections; and cites several reference documents as follows:

Blumberg (US Patent No. 2003/0038735)

He (US Patent No. 2003/0048205)

King et al. (US Patent No. 6011554)

Goren (US Patent No. 7190351)

Applicant respectfully traverses these rejections as follows:

1. Claim 35 is amended to include the wording of a "discontinuous" grouping of keys, similarly described above. The examiner objects to claim 35 by arguing that claim 35 is obvious given consideration to the combination of **King et al.**, **Blumberg** and **He**. **Blumberg** ([0115], Fig. 11) does not, in reference to four keys, discuss or depict a four key configuration split in such a way that a group of two keys of the four keys are discontinuous from the remaining other group of two keys. Note, that **Blumberg** proposes many various configurations of keypads, and also proposes split keypads (Fig. 8a, 8b, 8c) but does not consider a split (discontinuous) 4-key keypad. Furthermore, since **Blumberg** has proposed an extensive number of differing keypads, we may conclude that a 4 key discontinuous keypad was not considered in his patent application, as is clearly evident, and is therefore not obvious to an artisan skilled in the art. Furthermore, Fig. 11 only evidences a continuous keypad without any discontinuation between keys or groups of keys. Therefore, we conclude that the Examiner's argument, namely "**Blumberg** teaches a data entry system of a device, comprising: … where in the four input means to which the letters are assigned are arranged in two discontinuous groups", no longer applies. With consideration of the amendment to claim 35, the clear lack of evidence in **Blumberg**, the combination of **King et al.** and **He** with **Blumberg**, can no longer support the examiners objections and we conclude the Examiner's objection is traversed.

It is respectfully submitted that the Examiner's rejection of Claim 35 is overcome; consequently the rejection of the corresponding dependent claims (36, 37, 38, 39, 40, 41, 44, 45, 46, 48, 49, 50, 52, 54, and 81) is also deemed overcome.

2. Claim 85 is amended to include the wording of "two groups are located on opposite sides of a touch screen", such that the claim is restricted accordingly. Goren does show or teach that input means/keys comprising letters are located on opposite sides of a screen. Goren limits his invention to having one group of keys having only function keys (i.e. Goren does not teach that both groups of keys contain letters of a language). In addition, Goren is not using a word predictive system. His invention is only used to enter data character by character wherein each character is generally entered by several manipulations of the keys on one side of the device. Furthermore, Goren has at least four keys on each side of the screen necessitating that an average user would be required to look at the key for data entry purposes; while in the description of the invention through claim 85, by having only two input means under each finger, the user can enter data on a touch screen without the practical requirement of having to look at the keys. This argument is convincing since it is supported by many various drawings and description of 4 keys, for paragraph 0711 of the description.

It is respectfully submitted that the Examiner's rejection of Claim 85 is overcome; consequently the rejection of the corresponding dependent claims (86, 87, 88, 89, 90, 91, 92, 93, and 94) is also deemed overcome.

Accordingly, the claims of record are respectfully deemed allowable. Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Recognizing that Internet communications are not secure, I hereby authorize the USPTO to communicate with me concerning any subject matter of this application by electronic mail. I understand that a copy of these communications will be made of record in the application file.

Respectfully submitted,

DEKEL PATENT LTD.

/David Klein/

David Klein, Patent Agent
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PTO/SB/22 (09-11)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARMENT OF COMMERCE
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PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)	Docket Number (Optional) 2104-25GHA-US
Application Number 10/553575	Filed September 26, 2006
For SYSTEM TO ENHANCE DATA ENTRY IN MOBILE AND FIXED ENVIRONMENT	
Art Unit 2629	Examiner Vinh Tang Lam

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above identified application.

The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):

	Fee	Small Entity Fee	
☐ One month (37 CFR 1.17(a)(1))	$150	$75	$
☐ Two months (37 CFR 1.17(a)(2))	$560	$280	$
☑ Three months (37 CFR 1.17(a)(3))	$1270	$635	$ 700
☐ Four months (37 CFR 1.17(a)(4))	$1980	$990	$
☐ Five months (37 CFR 1.17(a)(5))	$2690	$1345	$

☑ Applicant claims small entity status. See 37 CFR 1.27.

☐ A check in the amount of the fee is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☐ The Director has already been authorized to charge fees in this application to a Deposit Account.

☐ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number _____.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

I am the

☐ applicant/inventor.

☐ assignee of record of the entire interest. See 37 CFR 3.71.
Statement under 37 CFR 3.73(b) is enclosed (Form PTO/SB/96).

☑ attorney or agent of record. Registration Number 41118

☐ attorney or agent under 37 CFR 1.34.
Registration number if acting under 37 CFR 1.34 _____

/David Klein/	6 May 2013
Signature	Date
David Klein	+972-8-9495334
Typed or printed name	Telephone Number

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.

☐ Total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.136(a). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 6 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal

Application Number:	10553575
Filing Date:	26-Sep-2006
Title of Invention:	Systems to enhance data entry in mobile and fixed environment
First Named Inventor/Applicant Name:	Benjamin Firooz Ghassabian
Filer:	David L. Klein
Attorney Docket Number:	2104-25GHA-US

Filed as Small Entity

U.S. National Stage under 35 USC 371 Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 3 months with $0 paid	2253	1	700	700

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
		Total in USD ($)		**700**

Electronic Acknowledgement Receipt	
EFS ID:	15696258
Application Number:	10553575
International Application Number:	
Confirmation Number:	7464
Title of Invention:	Systems to enhance data entry in mobile and fixed environment
First Named Inventor/Applicant Name:	Benjamin Firooz Ghassabian
Customer Number:	32964
Filer:	David L. Klein
Filer Authorized By:	
Attorney Docket Number:	2104-25GHA-US
Receipt Date:	06-MAY-2013
Filing Date:	26-SEP-2006
Time Stamp:	12:46:57
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$700
RAM confirmation Number	10602
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Amendment/Req. Reconsideration-After Non-Final Reject	2104-025_may13_usr.pdf	62690 0cbc2d073e2486aaa7ebf96cb3e3cdfc7de1c0d8	no	8
Warnings:					
Information:					
2	Extension of Time	2104-25_extension_sb0022.pdf	286232 a4d423bf4b17cd0c45c0ac40a4e28b3be59f71ef	no	2
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	29899 1648ef944f67b9089481d3f89a87a98c9c6a4f7b	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	378821		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 10/553,575	Filing Date 09/26/2006	☐ To be Mailed

ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT 05/06/2013	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 29	Minus	** 40	= 0	X $40 =	0
Independent (37 CFR 1.16(h))	* 4	Minus	***5	= 0	X $210 =	0
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	**0**

AMENDMENT	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/Tina J. Barden/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,575	09/26/2006	Benjamin Firooz Ghassabian	2104-25GHA-US	7464

32964 7590 07/03/2013

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BEIT HAROF'IM
18 MENUHA VENAHALA STREET, ROOM 27
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ISRAEL

EXAMINER	
LAM, VINH TANG	
ART UNIT	**PAPER NUMBER**
2695	

MAIL DATE	DELIVERY MODE
07/03/2013	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/553,575	Applicant(s) GHASSABIAN, BENJAMIN FIROOZ	
	Examiner VINH LAM	Art Unit 2695	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *6 May 2013*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *1-94* is/are pending in the application.

5a) Of the above claim(s) *1-34,42,43,47,51,53,55-80,82-84* is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *35-41,44-46,48-50,52,54,81,85-94* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *17 October 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some * c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Interim copies:

a)☐ All b)☐ Some c)☐ None of the: Interim copies of the priority documents have been received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) a patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims **35-51**, **44**, **46**, **48-50**, **52**, **54**, and **81** are rejected under 35 U.S.C. 103(a) as being unpatentable over **King et al. (US Patent No. 6011554)** in view of **Blumberg (US Patent No. 2003/0038735).**

Regarding Claim **35**, (Currently amended) **King et al.** teach a data entry system, comprising:

an input unit *(Col. **6**, Ln. **16-35**, FIG. **1A**, i.e. **50**)* adapted to receive a plurality of first input signals *(Col. **6**, Ln. **16-35**, FIG. **1B**, i.e. signals from left two rows of keys **56**)*, wherein at least some of the first input signals *(Col. **6**, Ln. **16-35**, FIG. **1B**, i.e. signals from left two rows of keys **56**)* are together associated with substantially all the letters *(Col. **6**, Ln. **16-35**, FIG. **1B**, i.e. keys **56** which include letter groups **RPQ, ADF, OLX, EWV,CYK,** and **THJ**)* of a language *(Col. **6**, Ln. **16-35**, FIG. **1B**, i.e. English letters)* such that at least one *(Col. **6**, Ln. **16-35**, FIG. **1B**, i.e. one of keys **56**)* of the first input signals is associated with more than one letter *(Col. **6**, Ln. **16-35**, FIG. **1B**, i.e. top row and left most key which includes at least **RPQ**)*; and

a word predictive system *(Col. **6**, Ln. **17-45**, FIG. **1A & 1B**, i.e. keyboard disambiguating system **50**)* adapted to select a word *(Col. **7**, Ln. **19-42**; Col. **20**, Ln. **1-6**, FIG. **6**, i.e. **done**)* from a word database *(Col. **7**, Ln. **19-42**, FIG. **6**, i.e. selection list **76**)* responsive to a sequence *(Col. **7**, Ln. **19-42**, i.e. **ADF, OLX, NBZ**, and **EWV**)* of first input signals provided by a user *(Col. **8**, Ln. **15-24**, FIG. **6**)*.

However, **King et al.** do not explicitly teach the input unit comprises a plurality of four keys representing the first input signals to which the letters are assigned, said keys being arranged in two groups, wherein the keys of each group are discontinuous from the keys of the other group.

It is reasonably pertinent to the particular problem with which the applicant was concerned, in this case, improving the speed of entering data via an input device, **Blumberg** teaches

the input unit comprises a plurality of four keys *([**0115**], FIG. **11**, i.e. left (**1&3**) and right (**2&4**))* representing the first input signals to which the letters are assigned *([**0090**], i.e. user has finished typing the word "Now", by striking codes 5-5-8)*, said keys being arranged in two groups *([**0115**], FIG. **11**, i.e. left (**1&3**) and right (**2&4**))*, wherein the keys of each group are discontinuous *([**0115**], FIG. **11**, i.e. the **gap** (obviously shown discontinuity) between left column (**1&3**) and right column (**2&4**))*from the keys of the other group *([**0115**], FIG. **11**, i.e. left (**1&3**) and right (**2&4**))*.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify **King et al.** teaching of an input unit associated with all the letters of a language with **Blumberg** teaching of a plurality of four keys

representing the first input signals to which the letters are assigned, said keys being arranged in two groups, wherein the keys of each group are discontinuous from the keys of the other group *to improve the accuracy and input speed of entering data from an input device.*

Regarding Claim **36**, (Previously amended) the system of claim 35, **King et al.** teach comprising:

an output unit *(Col. **20**, Ln. **1**-**4**, FIG. **6**, i.e. display **53**)* for displaying the selected word *(Col. **20**, Ln. **12**-**1**, FIG. **6**, e.g. **done**)* to a user; and

wherein the word predictive system is adapted to select a word *(Col. **20**, Ln. **12**-**1**, FIG. **6**, e.g. **done**)* for a sequence of first input signals *(Col. **7**, Ln. **19**-**42**, i.e. **ADF** and **OLX**)* by using received second input *(Col. **7**, Ln. **19**-**42**, i.e. **NBZ**)* that correspond to the letters of the language *(Col. **7**, Ln. **19**-**42**, i.e. **NBZ,** e.g. **English**)*.

Regarding Claim **37**, (Previously amended) the system of claim 36, wherein the second input unit is adapted to receive speech signals corresponding to the letters of the language which is *well-known* in the art as “Speech Recognition” *to improve the input speed of entering data from an input device and/or to accommodate person with physically disable.*

Regarding Claim **38**, (Previously presented) the system of claim 37, comprising a recognition system which uses the speech signals corresponding to the letters of the alphabet in selecting for first input signals a single letter from the group of symbols associated with the first signal which is *well-known* in the art of “Speech

Recognition" *to improve the input speed of entering data from an input device and/or to accommodate person with physically disable.*

Regarding Claim **39**, (Previously amended) the system of claim 35, wherein **Blumberg** teaches the two groups of keys are located on opposite sides of a device (*[**0115**], FIG. **11**, i.e. **1/3** & **2/4***).

Regarding Claim **40**, (Previously amended) the system of claim 35, wherein **Blumberg** teaches the data entry system comprises four keys *([**0115**], FIG. **11**, i.e. left (**1&3**) and right **(2&4)**)*, each key being used to generate one of the first input signals (*[**0087**]*), all the letters of the language being assigned amongst all of said four keys, and wherein said four keys are operative to disambiguously generate all the letters of the language *([**0115**], FIG. **11**, i.e. left (**1&3**) and right **(2&4)**)*.

Regarding Claim **41**, (Previously amended) the system of claim 40, wherein **Blumberg** teaches the keys of each group are arranged so as to form two columns of keys (*[**0115**], FIG. **11**, i.e. **1/3** & **2/4***).

Regarding Claim **44**, (Previously amended) the system of claim 35, wherein **Blumberg** teaches the at least some of the first input signals are together associated with all the letters of the language *([**0115**], FIG. **11**, i.e. left (**1&3**) and right **(2&4)**)*.

Regarding Claim **46**, (Previously amended) the system of claim 40, wherein **King et al.** teach the keys comprise at least one of virtual keys and physical keys *(Col. **6**, Ln. **16-35**, FIG. **1A**)*.

Regarding Claim **48**, (Previously presented) the system of claim 40,

wherein **King et al.** teach different interactions with the keys correspond to different signals (*Col. **6**, Ln. **28-33**, FIG. **1B**, e.g. **1, 4,** and **7…***).

Regarding Claim **49**, (Previously presented) the system of claim 48, wherein **King et al.** teach the keys respond to two different types of interactions, a first type of interaction corresponds to respective ones of the first signals and a second type of interaction corresponds to symbols other than those represented by the first signals (*Col. **6**, Ln. **28-33**, FIG. **1B**, e.g. **1, C, Y,** or **K…**)*.

Regarding Claim **50**, (Previously presented) the system of claim 49, wherein **King et al.** teach the keys are associated with respective ones of the first signals when pressed slightly and with other symbols when pressed heavily *(Col. **6**, Ln. **28-33**, FIG. **1B**, e.g. **1, C, Y,** or **K…**)*.

Regarding Claim **52**, (Previously presented) the system of claim 35 , wherein **King et al.** teach the letters of the language are assigned *(Col. **6**, Ln. **16-35**, FIG. **1B**, i.e. keys **56** which include letter groups **RPQ, ADF, OLX, EWV,CYK,** and **THJ**)*.

Regarding Claim **54**, (Previously amended) the system of claim 40, wherein **Blumberg** teaches the letter keys of each group are arranged so as to form two columns of keys *(**[0115]**, FIG. **11**, i.e. left (**1&3)** and right **(2&4))*.

Regarding Claim **81**, (Previously presented) the system of claim 40, wherein **Blumberg** teaches the letter keys of each group are arranged so as to form two rows of keys *(**[0115]**, FIG. **11**, i.e. top (**1&2)** and bottom **(3&4))*.

2. Claim **45** is rejected under 35 U.S.C. 103(a) as being unpatentable over **King et al. (US Patent No. 6011554)** in view of **Blumberg (US Patent No. 2003/0038735)** and further in view of **He (US Patent No. 2003/0048205).**

Regarding Claim **45**, (Previously amended) **King et al.** and **Blumberg** teach the system of claim 35.

However, **King et al.** and **Blumberg** do not explicitly teach said space key and said backspace key are arranged such that the one which is adjacent said left group is further to the left of said left group and the one which is adjacent said right group is further to the right of said right group.

In the same field of endeavor, **He** teaches

said space key and said backspace key are arranged such that the one which is adjacent said left group is further to the left of said left group and the one which is adjacent said right group is further to the right of said right group ***([0066]****, FIG.* ***4****)*.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify **King et al.** and **Blumberg** teaching of an input unit associated with all the letters of a language, a plurality of four keys being arranged in two groups, wherein the keys of each group are discontinuous from the keys of the other group with **He** teaching of the space key and the backspace key are arranged such that the one which is adjacent the left group is further to the left of the left group and the one which is adjacent the right group is further to the right of the right group *to improve the accuracy and input speed of entering data from an input device.*

3. Claims **85-87** and **89-94** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Blumberg (US Patent No. 2003/0038735)** in view of **Bowen (US Patent No. 5644338)** and **King et al. (US Patent No. 6011554).**

Regarding Claim **85**, (Currently amended) **Blumberg** teaches a data entry system of a device, comprising:

four input means *([**0115**], FIG. **11**, i.e. top (**1&2**) and bottom **(3&4))* associated with the letters of a language *([**0115**], FIG. **11**, i.e. A-Z of English)* such that each of the input means includes a plurality of letters *([**0115**], FIG. **11**, i.e. **1** includes letters **A-F**))*;

wherein the four input means to which the letters are assigned are arranged in two groups *([**0115**], FIG. **11**, i.e. top (**1&2**) and bottom **(3&4))*, two of the four input means in one group and the other two of the four input means in the other group *([**0115**], FIG. **11**, i.e. top (**1&2**) and bottom **(3&4))*.

However, **Blumberg** does not explicitly teach said two groups are located on opposite sides of a touch screen, and

said data system further comprises a word predictive system adapted to select a word form a word database responsive to a sequence of input signals provided by said input means.

It is reasonably pertinent to the particular problem with which the applicant was concerned, in this case, enhancing user input/output interface, **Bowen** teaches said two

groups are located on opposite sides of a touch screen *(Col. **7**, Ln. **55-62**, FIG. **12**, i.e. display **84** could also be touch sensitive).*

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify **Blumberg** teaching of a data entry system of a device comprising four input means associated with the letters of a language such that each of the input means includes a plurality of letters, the four input means to which the letters are assigned are arranged in two groups, two of the four input means in one group, and the other two of the four input means in the other group with **Bowen** teaching of said two groups are located on opposite sides of a touch screen *to improve the accuracy of user input/output interface by providing a touch screen between the two groups of keys including all letters of a language.*

However, **Blumberg** and **Bowen** do not explicitly teach said data system further comprises a word predictive system adapted to select a word form a word database responsive to a sequence of input signals provided by said input means.

In the same field of endeavor, **King et al.** teach

said data system further comprises a word predictive system *(Col. **6**, Ln. **17-45**, FIG. **1A & 1B**, i.e. keyboard disambiguating system **50**)* adapted to select a word *(Col. **7**, Ln. **19-42**; Col. **20**, Ln. **1-6**, FIG. **6**, i.e. **done**)* from a word database *(Col. **7**, Ln. **19-42**, FIG. **6**, i.e. selection list **76**)* responsive to a sequence *(Col. **7**, Ln. **19-42**, i.e. **ADF, OLX, NBZ**, and **EWV**)* of first input signals provided by said input means *(Col. **6**, Ln. **16-35**, FIG. **1A**, i.e. **50**).*

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify **Blumberg** and **Bowen** teaching of a data entry system of a device comprising four input means associated with the letters of a language such that each of the input means includes a plurality of letters, wherein the four input means to which the letters are assigned are arranged in two groups, two of the four input means in one group, the other two of the four input means in the other group, and a touch screen between the two groups of keys with **King et al.** teaching of said data system further comprises a word predictive system adapted to select a word form a word database responsive to a sequence of input signals provided by said input means *to improve the speed of entering data via an input device.*

Regarding Claim **86**, (Previously presented) the data entry system according to claim 85, wherein **King et al.** teach said input means are used with a word predictive system *(Col. **6**, Ln. **17-45**, FIG. **1A & 1B**, i.e. keyboard disambiguating system **50**)* using a dictionary of words *(Col. **7**, Ln. **19-42**, FIG. **6**, i.e. selection list **76**)*, wherein upon actuation of at least said input means, the system predicts one or more words from the dictionary *(Col. **7**, Ln. **19-42**; Col. **20**, Ln. **1-6**, FIG. **6**, i.e. **done**)*.

Regarding Claim **87**, (Previously presented) the data entry system according to claim 86, wherein **King et al.** teach at least one letter of the predicted word comprises a letter entered precisely by said input means *(Col. **7**, Ln. **19-42**; Col. **20**, Ln. **1-6**, FIG. **6**, i.e. **done**)*.

Regarding Claim **89**, (Previously presented) the data entry system according to claim 85, wherein **Blumberg** teaches the input means of each group forms a column of two letter input means *([**0115**], FIG. **11**, i.e. **A** of button **1** and **S** of button **3**)*.

Regarding Claim **91**, (Previously presented) the data entry system according to claim 85, wherein **Blumberg** teaches said input means are keys *([**0115**], FIG. **11**)*.

Regarding Claim **92**, (Previously presented) the data entry system according to claim 85, wherein **Blumberg** teaches the two groups of the input means are arranged on opposite sides of a surface of an input device *([**0115**], FIG. **11**, i.e. left (**1&3**) and right (**2&4**))*.

Regarding Claim **93**, (Previously presented) the data entry system according to claim 85, wherein **Bowen** teaches the two groups of the input means are touch screen keys arranged on opposite sides of a screen of an input device *(Col. **7**, Ln. **55-62**, FIG. **12**, i.e. display **84** could also be touch sensitive)*.

Regarding Claim **94**, (Previously presented) the data entry system according to claim 85, wherein **Bowen** teaches the two groups of the input means are separated by at least a portion of a screen *(Col. **7**, Ln. **55-62**, FIG. **12**, i.e. display **84** could also be touch sensitive)* of an input device *(Col. **7**, Ln. **55-62**, FIG. **12**, i.e. computer with full size keys)*.

4. Claims **88** and **90** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Blumberg (US Patent No. 2003/0038735)** in view of **Bowen (US Patent No.**

5644338), **King et al. (US Patent No. 6011554)**, and **He (US Patent No. 2003/0048205).**

Regarding Claim **88**, (Previously amended) **Blumberg, Bowen,** and **King et al.** teach the data entry system according to claim 85.

However, **Blumberg, Bowen,** and **King et al.** do not explicitly teach said space key and said backspace key are arranged such that the one which is adjacent said left group is further to the left of said left group and the one which is adjacent said right group is further to the right of said right group.

In the same field of endeavor, **He** teaches

said space key and said backspace key are arranged such that the one which is adjacent said left group is further to the left of said left group and the one which is adjacent said right group is further to the right of said right group ***([0066]**, FIG. **4**)*.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify **Blumberg, Bowen,** and **King et al.** teaching of four input means associated with the letters of a language, the four input means to which the letters are assigned are arranged in two groups which having two input means in each separated by a touch screen with **He** teaching of said space key and said backspace key are arranged such that the one which is adjacent said left group is further to the left of said left group and the one which is adjacent said right group is further to the right of said right group *to improve the accuracy of user input interface by providing a space key near one group and backspace near the other group.*

Regarding Claim **90**, (Currently amended) the data entry system according to claim 88, wherein **Blumberg** teaches the backspace key is on a side of a first column *([**0059**], FIG. **3**, i.e. upper side of character keys **1-3**)* of the input means, and the space key is on a side of a second column *([**0059**], FIG. **3**, i.e. lower side of character keys **4-6**)* of the input means.

Response to Arguments/Amendments/Remarks

5. Claims **1-34**, **42-43**, **47**, **51**, **53**, and **55-80** are canceled.

6. Claims **82-84** are withdrawn.

7. Applicant's arguments with respect to claims 35 and 85 have been considered but are moot because of the newly added references, rationales, and analysis being used in the current rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VINH LAM whose telephone number is (571) 270-3704. The examiner can normally be reached on 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on (571)272-7674. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/VINH LAM/

Examiner, Art Unit 2695

/Amare Mengistu/

Supervisory Patent Examiner, Art Unit 2695

Notice of References Cited	Application/Control No. 10/553,575	Applicant(s)/Patent Under Reexamination GHASSABIAN, BENJAMIN FIR	
	Examiner VINH LAM	Art Unit 2695	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-5,644,338 A	07-1997	Bowen, James H.	345/168
*	B	US-6,011,554 A	01-2000	King et al.	715/811
*	C	US-6,359,572 B1	03-2002	Vale, Peter O.	341/23
*	D	US-6,356,866 B1	03-2002	Pratley et al.	704/9
*	E	US-2003/0038735 A1	02-2003	Blumberg, Marvin R.	341/22
*	F	US-2003/0048205 A1	03-2003	He, Junru	341/26
*	G	US-6,801,190 B1	10-2004	Robinson et al.	345/173
*	H	US-6,834,195 B2	12-2004	Brandenberg et al.	455/456.3
*	I	US-7,098,896 B2	08-2006	Kushler et al.	345/168
*	J	US-7,152,213 B2	12-2006	Pu et al.	715/812
*	K	US-7,190,351 B1	03-2007	Goren, Michael	345/173
*	L	US-7,218,249 B2	05-2007	Chadha, Lovleen	341/23
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10553575	GHASSABIAN, BENJAMIN FIROOZ
	Examiner	Art Unit
	VINH T LAM	2695

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
345	156-172	3/31/2009	Vinh Lam
341	22	10/18/2012	

SEARCH NOTES		
Search Notes	Date	Examiner
Search Inventors. No ODP.	7/30/2008	Vinh Lam
Search Internet for synonyms and technical terms.	3/31/2009	Vinh Lam
Search Class/Subclass with 2629 QEM support.	3/31/2009	Vinh Lam
Search EAST for prior arts.	6/18/2013	Vinh Lam
Review Amendments and Arguments	6/18/2013	Vinh Lam

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

/VINH LAM/ Examiner, Art Unit 2695	

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10553575	GHASSABIAN, BENJAMIN FIROOZ
	Examiner	Art Unit
	VINH T LAM	2695

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	06/18/2013	03/31/2009	11/09/2009	04/16/2010	10/30/2010	07/06/2011	11/22/2011	03/30/2012	10/18/2012
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	35	✓		N	✓	✓	✓	✓	✓	✓

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10553575	GHASSABIAN, BENJAMIN FIROOZ
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✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
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☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	06/18/2013	03/31/2009	11/09/2009	04/16/2010	10/30/2010	07/06/2011	11/22/2011	03/30/2012	10/18/2012
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Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10553575	GHASSABIAN, BENJAMIN FIROOZ
	Examiner	Art Unit
	VINH T LAM	2695

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	06/18/2013	03/31/2009	11/09/2009	04/16/2010	10/30/2010	07/06/2011	11/22/2011	03/30/2012	10/18/2012
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	92	✓						✓	✓	✓
	93	✓						✓	✓	✓
	94	✓						✓	✓	✓

Electronic Patent Application Fee Transmittal

Application Number:	10553575
Filing Date:	26-Sep-2006
Title of Invention:	Systems to enhance data entry in mobile and fixed environment
First Named Inventor/Applicant Name:	Benjamin Firooz Ghassabian
Filer:	David L. Klein
Attorney Docket Number:	2104-25GHA-US

Filed as Small Entity

U.S. National Stage under 35 USC 371 Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 3 months with $0 paid	2253	1	700	700

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
		Total in USD ($)		**700**

Electronic Acknowledgement Receipt	
EFS ID:	17797053
Application Number:	10553575
International Application Number:	
Confirmation Number:	7464
Title of Invention:	Systems to enhance data entry in mobile and fixed environment
First Named Inventor/Applicant Name:	Benjamin Firooz Ghassabian
Customer Number:	32964
Filer:	David L. Klein
Filer Authorized By:	
Attorney Docket Number:	2104-25GHA-US
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Fee Worksheet (SB06)	fee-info.pdf	29899 c5617528ccb4ae1102ae907f49119c918da74744	no	2
Warnings:					
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			Total Files Size (in bytes):	29899	

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New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,575	09/26/2006	Benjamin Firooz Ghassabian	2104-25GHA-US	7464

32964 7590 03/05/2014

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EXAMINER	
LAM, VINH TANG	
ART UNIT	**PAPER NUMBER**
2623	

MAIL DATE	DELIVERY MODE
03/05/2014	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of Abandonment	Application No.	Applicant(s)
	10/553,575	GHASSABIAN, BENJAMIN FIROOZ
	Examiner	**Art Unit**
	VINH LAM	2623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

This application is abandoned in view of:

1. ☒ Applicant's failure to timely file a proper reply to the Office letter mailed on *03 July 2013*.
   (a) ☐ A reply was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply (including a total extension of time of _____ month(s)) which expired on _____.
   (b) ☐ A proposed reply was received on _____, but it does not constitute a proper reply under 37 CFR 1.113 to the final rejection. (A proper reply under 37 CFR 1.113 to a final rejection consists only of: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114).
   (c) ☐ A reply was received on _____ but it does not constitute a proper reply, or a bona fide attempt at a proper reply, to the non-final rejection. See 37 CFR 1.85(a) and 1.111. (See explanation in box 7 below).
   (d) ☒ No reply has been received.

2. ☐ Applicant's failure to timely pay the required issue fee and publication fee, if applicable, within the statutory period of three months from the mailing date of the Notice of Allowance (PTOL-85).
   (a) ☐ The issue fee and publication fee, if applicable, was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the statutory period for payment of the issue fee (and publication fee) set in the Notice of Allowance (PTOL-85).
   (b) ☐ The submitted fee of $_____ is insufficient. A balance of $_____ is due.
   The issue fee required by 37 CFR 1.18 is $_____. The publication fee, if required by 37 CFR 1.18(d), is $_____.
   (c) ☐ The issue fee and publication fee, if applicable, has not been received.

3. ☐ Applicant's failure to timely file corrected drawings as required by, and within the three-month period set in, the Notice of Allowability (PTO-37).
   (a) ☐ Proposed corrected drawings were received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply.
   (b) ☐ No corrected drawings have been received.

4. ☐ The letter of express abandonment which is signed by the attorney or agent of record or other party authorized under 37 CFR 1.33(b). See 37 CFR 1.138(b).

5. ☐ The letter of express abandonment which is signed by an attorney or agent (acting in a representative capacity under 37 CFR 1.34) upon the filing of a continuing application.

6. ☐ The decision by the Board of Patent Appeals and Interference rendered on _____ and because the period for seeking court review of the decision has expired and there are no allowed claims.

7. ☐ The reason(s) below:

/Amare Mengistu/ Supervisory Patent Examiner, Art Unit 2623	/VINH LAM/ Examiner, Art Unit 2623

Petitions to revive under 37 CFR 1.137, or requests to withdraw the holding of abandonment under 37 CFR 1.181, should be promptly filed to minimize any negative effects on patent term.

U.S. Patent and Trademark Office