**Title:** METHOD FOR INPUTTING ALPHABETIC CHARACTERS FOR THE ELECTRONIC APPARATUSES

**Abstract:** The present invention relates to an apparatus for inputting Chinese characters that is applicable to various mobile phones whose buttons (keys) are limited in number as various electronic equipments such as a personal computer become smaller. One alphabet is decided by pressing two keys of a keypad to which ten basic figures made by analyzing shapes of alphabets are allocated. Further, each alphabet corresponds to a combination of two keys depending on the order of handwriting the alphabet. Thus, the user can conveniently input alphabets with the same manner as a Korean handwriting manner without memorizing the key arrangement. Since the user can input all alphabets using limited keys, the alphabet input apparatus may be used as a small-sized keyboard or keypad in small-sized and multi-function electronic equipments such as a mobile phone.
Title of Invention

METHOD FOR INPUTTING ALPHABETIC CHARACTERS FOR THE ELECTRONIC APPARATUSES

Technical Field

The present invention relates to an alphabet input apparatus and, more particularly, to an alphabet input apparatus that is applicable to various mobile phones whose buttons (keys) are limited in number as various electronic equipments such as a personal computer become smaller.

Background Art

A standard computer keyboard is widely being used as a representative character input device. In a computer keyboard for inputting English Alphabet, each of 26 alphabets is allocated to each key. Therefore, when keys of alphabets corresponding to the order of a word are pressed, the alphabets are displayed according to the order by a simple program. However, the keyboard occupies a considerable space and is limited in movability due to keys corresponding to 26 alphabets.

With the rapid advance of electric and electronic technologies, various electronic equipments such as mobile phones adopting CDMA, PCS, TDMA, GSM, AMPS, and IMT-2000, a PDA, a pager, a small-sized game machine, a remote controller, a camera, and home electronic appliances trench toward small-sized and high-tech. As functions of the electronic equipment have been improved while trending toward small-sized and desire for imputing characters to the electronic equipment
have been increased, a necessity for inputting characters have continuously been increased.

A conventional computer keyboard is not applicable to electronic equipments whose buttons (keys) must be limited in number. Therefore, there has been used a method (apparatus) in which two or three alphabets are allocated to one key and one alphabet is decided in response to the times of pressing a specific key within a predetermined time (see FIG. 1). For example, if “A, B, and C” are allocated (printed) to a specific key of a mobile phone and a user wants to input “A”, the user presses the specific key once. If the user wants to input “B”, the user successively presses the specific key twice. And if the user wants to input “C”, the user successively presses the specific key three times.

However, a relationship does not exist between alphabets allocated to one key and a logicality does not exist between a specific alphabet and the times of pressing a key for the specific alphabet. Therefore, a user must know where a desired alphabet is allocated, how many press a key for the desired alphabet, and whether the desired alphabet is correctly inputted. As a result, a user must concentrate his/her attention to use of the above-described input apparatus.

Disclosure of Invention

A purpose of the present invention to provide an alphabet input apparatus that can input all alphabets with the same key pressing times and input alphabets with the similar manner to a handwriting manner.

According to an aspect of the invention, a method of coding and inputting alphabets to an electronic equipment comprises the steps of
receiving a key signal from an input key to which ten basic figures extracted by analyzing shapes of alphabets “a-z” are allocated, and deciding an alphabet by sequentially extracting two input key signals when an input signal is received from the input key and searching a combination of the signals in database storing information of 26 alphabets coded by the combination.

Brief Description of Drawings

FIG. 1 is an example view showing an arrangement of keys according to a conventional alphabet input method.

FIG. 2 is an example view showing an arrangement of keys according to alphabet input method of the present invention.

FIG. 3 is a schematic construction view of an exemplary apparatus adopting an alphabet input method of the present invention.

Best Mode for Carrying out the Invention

The present invention will now be described more fully hereinafter with reference to accompanying drawings.

According to the invention, ten basic figures for inputting English alphabets may have any shape under the principle that two figures each correspond to one of alphabets “a-z”. However, the ten basic figures are preferably 1, 2, –, C, D, I, O, U, Z, and S that are extracted from analyzed shapes of alphabets. The “table 1” illustrates alphabets related with the basic figures and meanings thereof.
<TABLE 1>

<table>
<thead>
<tr>
<th>Figures</th>
<th>Related Alphabets</th>
<th>Meanings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>b, d, h, k, t</td>
<td>vertical element of related alphabets</td>
</tr>
<tr>
<td>∩</td>
<td>h, m, n, o</td>
<td>element ∩ of related alphabets</td>
</tr>
<tr>
<td>−</td>
<td>e, f, t, v, z</td>
<td>horizontal element of related alphabets</td>
</tr>
<tr>
<td>C</td>
<td>a, c, d, e, g, k, o, q, x</td>
<td>element C of related alphabets</td>
</tr>
<tr>
<td>1</td>
<td>a, i, l, n, r, t, u</td>
<td>vertical element of related alphabets</td>
</tr>
<tr>
<td>⊎</td>
<td>b, o, p, x</td>
<td>element ⊎ of related alphabets</td>
</tr>
<tr>
<td>1</td>
<td>p, q, t</td>
<td>vertical element of related alphabets</td>
</tr>
<tr>
<td>∪</td>
<td>o, u, v, w, y</td>
<td>element ∪ of related alphabets</td>
</tr>
<tr>
<td>⃣</td>
<td>i, j, z</td>
<td>dot and “z”</td>
</tr>
<tr>
<td>ʃ</td>
<td>f, g, j, r, s, y</td>
<td>similar to handwriting element of related alphabets</td>
</tr>
</tbody>
</table>

Further, combinations of two successive signals of each key and information corresponding to each alphabet are stored in database. The corresponding relationship is determined in view of alphabets, a basic figure related therewith, and a writing order of each alphabet. The “table 2” illustrates a preferable corresponding relationship.
The combinations are made to match an order of handwriting lower-case alphabets.

FIG. 2 partially shows a keypad (keyboard) to which the basic ten figures are allocated. In case of a keypad according to the present invention, a person skilled in the art will readily add input keys or add separate functions to input keys in order to input special characters such
as a quotation mark, a rest, a period, etc., shift Korean-English-Number input, shift from alphabet upper-case letters to lower-case letters, make a space, and change to Deutsch umlaut.

To describe the alphabet input method in detail, the "table 3" illustrates orders of inputting one word "keypad" according to old and now inventions (prior art and the present invention).

<table>
<thead>
<tr>
<th></th>
<th>input 'k'</th>
<th>input 'e'</th>
<th>input 'y'</th>
<th>input 'p'</th>
<th>Input 'a'</th>
<th>input 'd'</th>
</tr>
</thead>
<tbody>
<tr>
<td>old</td>
<td>JKL key</td>
<td>DEF key</td>
<td>WXY key</td>
<td>WXY key</td>
<td>PRS key</td>
<td>DEF key</td>
</tr>
<tr>
<td></td>
<td>twice</td>
<td>twice</td>
<td>3 times</td>
<td>3 times</td>
<td>once</td>
<td>once</td>
</tr>
<tr>
<td>new</td>
<td>1 C</td>
<td>C -</td>
<td>O 5</td>
<td>1 0</td>
<td>C 1</td>
<td>C 1</td>
</tr>
</tbody>
</table>

As shown in the "table 3", in an alphabet input method according to the prior art, a user must check key positions and press a key once to thee times. On the other hand, in an alphabet input method according to the invention, a user can always input an alphabet by pressing a key twice in visual intuition (printed basic figures).

FIG. 3 illustrates a schematic construction of an example alphabet apparatus adopting an alphabet input method according to the present invention. The alphabet input apparatus includes an alphabet input unit comprising a keypad having ten input keys to which ten basic figures are respectively allocated, a database unit for storing information on alphabets each being inputted by two input key signal combinations, and an alphabet decision unit for extracting an alphabet corresponding to a combination (code) of an input signal by receiving a signal of the
alphabet input unit and searching the database unit. The alphabet input apparatus may further includes a storing device for temporarily storing an input signal and a display device for sequentially displaying decided alphabets. The components of the alphabet input apparatus are merely divided in function, so that they may not be physically independent. For example, it will be understood that the database unit and the alphabet decision unit are fabricated by one monolithic program or part.

An alarm system may be added for coping with an abnormal case that, for example, a key signal which does not correspond to an alphabet is inputted or the next key input signal is not inputted for predetermined time after odd-numbered key input. When the abnormal case occurs, the alarm system alarms a user to use the alphabet input apparatus correctly. Further, in the stage of deciding an alphabet, a person skilled in the art readily adds a function to automatically recognize a directly presenting alphabet following an initially inputted alphabet and a period as an upper-case letter and recognize the others as lower-case letters.

Industrial Usability

According to an alphabet input method of the present invention, one alphabet is decided by pressing two keys of a keypad to which ten basic figures made by analyzing shapes of alphabets are allocated. Further, each alphabet corresponds to a combination of two keys depending on the order of handwriting the alphabet. Thus, the user can conveniently input alphabets with the same manner as a Korean handwriting manner without memorizing the key arrangement. Since the user can input all alphabets using limited keys, the alphabet input
apparatus may be used as a small-sized keyboard or keypad in small-sized and multi-function electronic equipments such as a mobile phone.
What is claimed is:

1. A method of coding and inputting alphabets to an electronic equipment, the method comprising the steps of:

   receiving a key signal from an input key to which ten basic figures extracted by analyzing shapes of alphabets “a-z” are allocated; and

   deciding an alphabet by sequentially extracting two input key signals when an input signal is received from the input key and searching a combination of the signals in database storing information of 26 alphabets coded by the combination.

2. The method as recited in claim 1, wherein the ten basic figures are $1, \cap, -, \subset, \exists, \cup, \subseteq, \subsetneq$, and $f$.

3. The method as recited in claim 2, wherein the database stores information:

   coding “a” or “A” by $c \cup$ key signal permutation;
   coding “b” or “B” by $1 \cap$ key signal permutation;
   coding “c” or “c” by $c \subset c$ key signal permutation;
   coding “d” or “D” by $c \cup 1$ key signal permutation;
   coding “e” or “E” by $c -$ key signal permutation;
   coding “f” or “F” by $f -$ key signal permutation;
   coding “g” or “G” by $c f$ key signal permutation;
   coding “h” or “H” by $1 \cap$ key signal permutation;
   coding “i” or “I” by $\exists 1$ key signal permutation;
   coding “j” or “J” by $\exists f$ key signal permutation;
coding "l" or "L" by \$ _ \$ key signal permutation;
coding "m" or "M" by \$ _ \$ key signal permutation;
coding "n" or "N" by \$ _ \$ key signal permutation;
coding "p" or "P" by \$ _ \$ key signal permutation;
coding "q" or "Q" by \$ _ \$ key signal permutation;
coding "r" or "R" by \$ _ \$ key signal permutation;
coding "u" or "U" by \$ _ \$ key signal permutation;
coding "v" or "V" by \$ _ \$ key signal permutation;
coding "w" or "W" by \$ _ \$ key signal permutation; and
coding "x" or "X" by \$ _ \$ key signal permutation.

4. The method as recited in claim 2 or claim 3, wherein the database store information:
coding "k" or "K" by \$ _ \$ or \$ _ \$ or \$ _ \$ key signal permutation;
coding "o" or "O" by \$ _ \$ or \$ _ \$ key signal permutation;
coding "s" or "S" by \$ _ \$ or \$ _ \$ key signal permutation

coding "t" or "T" by \$ _ \$ or \$ _ \$ or \$ _ \$ key signal permutation;
coding "y" or "Y" by \$ _ \$ or \$ _ \$ or \$ _ \$ key signal permutation; and
coding "z" or "Z" by \$ _ \$ or \$ _ \$ or \$ _ \$ key signal permutation.

5. The method as recited in any one of claims 1-4, adding an upper-lower shift function.
Fig. 1
Fig. 2
Fig. 3

- Alphabet Input Unit: Keyboard or Keypad including ten input keys to which ten basic figures are allocated.
- Alphabet Decision Unit: Program, Control Device, Temporary Storing Device.
- Display Device.
- Database Unit: Store alphabet coding information corresponding to order of two input key signals.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

IPC7 G06F 3/02

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)

IPC G06F 3/02, H04M 1/23

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean Patent applications for inventions since 1975
Korean Utility models and applications for Utility models since 1975

Electronic database consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
</table>

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