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T. YEN

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TYPEWRITER FOR WRITING THE CHINESE LANGUAGE

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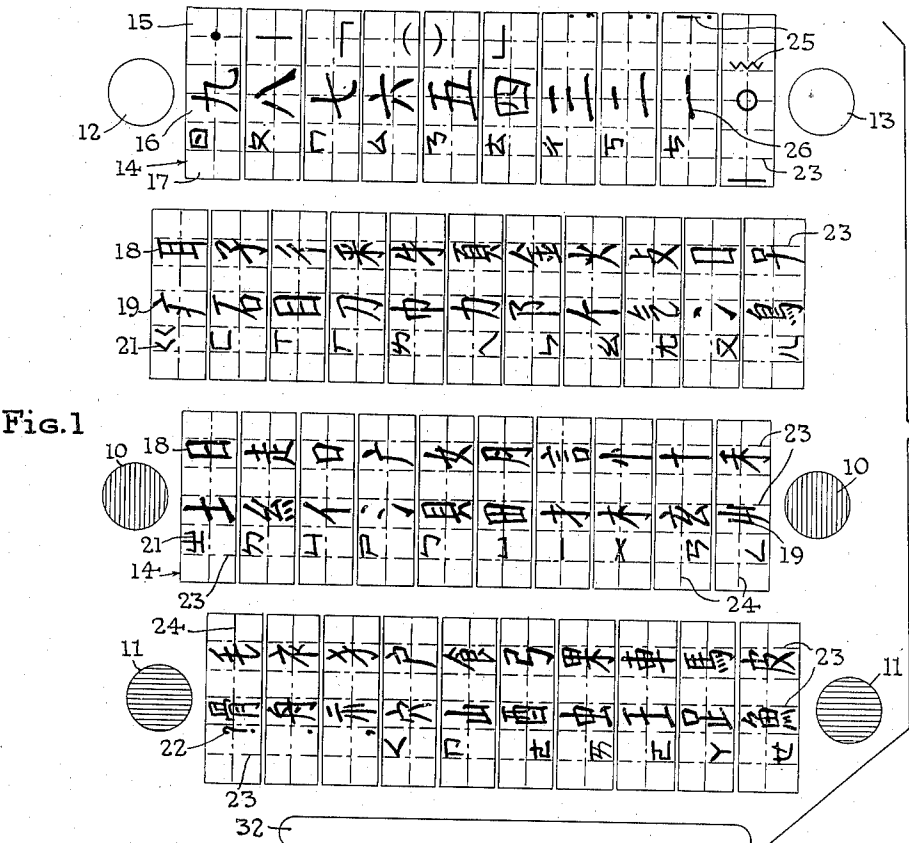


Fig. 1

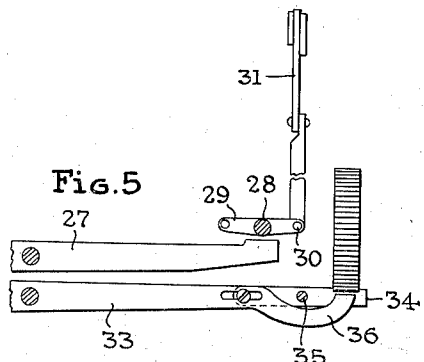
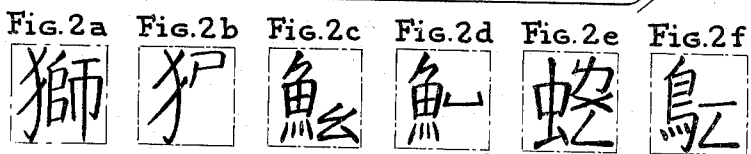


Fig. 5

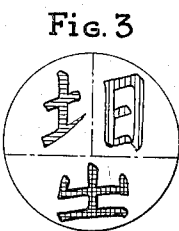


Fig. 3

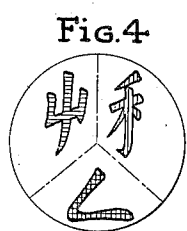


Fig. 4

Inventor
Tisheng Yen

Whittemore, Hulbert & Belknap
Attorneys

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TYPEWRITER FOR WRITING THE CHINESE LANGUAGE

Tisheng Yen, Washington, D. C.

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3 Claims. (Cl. 197—1)

1

The present invention relates to a keyboard for typewriters, typesetting machines, and the like, and more particularly to a keyboard for a machine designed to permit facile printing of the Chinese language. The invention also contemplates certain mechanical arrangements of the parts of a typewriting machine to permit the formation of words of the Chinese language wherein the words comprise combinations of certain symbols juxtaposed in so-called "block" form, as is customary in forming Chinese words.

Attempts have been made to improve or simplify writing or printing the Chinese language based on the construction of words according to the Hsing-sheng or the ideo-phonogram principle of the Liu-shu, sometimes referred to as the "six ancient principles of Chinese word-construction." According to this system of writing or printing, the words are formed in squares or blocks and consist of radicals, forming the left half of the word, and phonograms forming the right half of the word. More recently a system of writing has been devised which reduces the number of radicals from two hundred and fourteen to sixty-two, and provides for composite phonograms adapted to be formed from simple phonetic symbols, these symbols being officially recognized by the Ministry of Education of the Chinese Government. In the old system referred to, there are well over one thousand phonograms, each of which stands by itself and there is no provision to permit the formation of phonograms from phonetic symbols. In the new system, a relatively small number of phonetic symbols are employed to spell out all the phonograms necessary to write the language. Thus it is possible to accommodate all of the symbols of the improved system of printing Chinese words on a number of typewriter keys occupying a space no larger than that constituting the keyboard of a conventional American typewriter. In addition, provision is made on the same keyboard for numerals and suitable punctuation marks.

Of the phonetic symbols referred to, there are three groups consisting of twenty-one initials, three medials, and thirteen finals, from which it is possible to form combinations to produce phonograms of the Chinese national speech as distinguished from the old phonograms represented by the numerous combinations of strokes that are difficult to learn and cumbersome to write, either by handwriting or by printing. It is a characteristic of the Chinese speech that, as distinguished from Indo-European language, the initials, medials and finals of Chinese word-

2

sounds never occur at random but in a well defined order. The initials always occur at the beginning of a word and the finals at the end, and medials appear as intermediate modifying sounds in three phonetic-symbol combinations. Words may contain only two phonetic symbols or even a single phonetic symbol. But the order in which they follow is the same, i. e., a medial follows an initial, in which case the medial becomes a final. Or a medial may form an initial if used with a final. Also, a final follows an initial when the medial is omitted. Then again, any of the phonetic symbols used alone may constitute a complete word. However, it has been found that the majority of Chinese phonograms are formed of two phonetic-symbol combinations.

The main object of the present invention is to provide a system, involving mechanical arrangements of the parts, whereby conventional American typewriting machines or the like can be adapted for the facile printing of the Chinese language embodying the combinations of radicals and phonetic symbols as described herein.

One of the objects of the present invention is to provide a novel arrangement of keys on the keyboard of a typewriting machine or the like, the keys for printing Chinese being so arranged that the most active of the operator's fingers are in control of those symbols most frequently used.

It is another object of the invention to provide case shifts arranged to permit printing of phonetic symbols in the normal position of the typewriter carriage, the radicals being printed by shifting to other cases.

It is also an object of the invention to prevent longitudinal movement of the carriage to permit printing of two or more symbols in juxtaposed relation to form each Chinese word square, at the same time interposing the ribbon between the type and platen at each operation of a printing key.

Other objects will be apparent from the following description of the invention taken in connection with the accompanying drawings, in which

Fig. 1 is a diagrammatic illustration of a preferred arrangement of the type on the type face, it being understood, however, that the type are the reverse of those actually employed, and their relation to the keyboard used in the invention;

Fig. 2a illustrates a Chinese word formed with a radical and phonogram combination used in the old system of writing the Chinese language;

Figs. 2b to 2f illustrate a series of words formed by the typewriter employing symbols of the new system, Fig. 2b illustrating the manner in which

3

the word shown in Fig. 2a is written or printed by combining symbols of the new system;

Fig. 3 is an enlarged top plan view of one of the keys of the keyboard;

Fig. 4 is an enlarged top plan view of a modified key of the keyboard; and

Fig. 5 is a fragmentary elevation, partly in section, of the ratchet release and ribbon elevating mechanisms.

Referring to the drawings, it will be seen that, with the exception of shift keys 10, 11, back space key 12, and margin release key 13, each of the keys 14 is divided into three areas 15, 16, and 17, each corresponding to the cases, viz., lower, middle, and upper cases. Each of these areas corresponds to the "square" in which a word is formed, but the symbols are shown turned 90° from their normal vertical position for a purpose to be described hereinafter. In the first three rows, counting from the bottom, the radicals 18, 19 are shown in the upper and middle cases, while on the lower third 17 of each key the phonetic symbols 21 and certain punctuation marks 22 are shown. It is to be noted that each of the symbols 18 representing radicals occupies a position below medial lines 23 in each of the areas 15, 16, and 17 in the diagrammatic view, and the phonetic symbols 21 are positioned above this medial line. Actually these diagrams illustrate the arrangement of the symbols on a type bar if the bar were transparent and viewed from the back of the type bar. It is also to be noted that each of the type bars is divided by a second medial line 24 at right angles to line 23 and that the symbols representing initials, medials, and finals are arranged, respectively, to the left, on, and to the right of the horizontal medial line of each third of the type bar. The keyboard is so arranged that all the symbols forming initials are to the left of the keyboard, while the medials and finals are on the right side of the keyboard. The upper case of the fourth or back row of keys accommodates punctuation marks 25, the middle case numerals 26, and the lower case phonetic initials. Other punctuation marks are placed in the lower case of the first row.

As stated hereinbefore, the diagrammatic representation of the keyboard in Fig. 1 is illustrative of the type bar rather than the key itself. Preferred forms of keys are shown in Figs. 3 and 4, the upper symbols being radicals and the lower being phonetic symbols. In order to facilitate proper selection of the case shift, the upper case symbols are colored, those to the right, indicated by 18, being red, and the middle case symbols, numbered 19, to the left, being blue. The shift keys 10 for the upper case and keys 11 for the middle case are colored red and blue, respectively, corresponding with the colors of the radicals referred to. The symbols of the lower case on the keys are colored black. Thus a contrast of colors on the keys insures proper identification and selection of the shift keys.

In Figs. 2a to 2f are shown printed Chinese words, illustrating the relative location of the radicals and phonograms in the square. Fig. 2a illustrates a word composed of a radical and a phonogram of the old system of writing Chinese; Figs. 2b to 2f represent words formed from symbols of the new system; Fig. 2b representing a word composed of a radical and an initial; Fig. 2c a radical and a final; Fig. 2d a radical and a medial; Fig. 2e a word consisting of a radical, an initial, a medial and a final; and Fig. 2f a radical, a medial, and a final. It is possible, when

4

printing simple Chinese, to form words of word-sounds only and thus eliminate radicals. Hence, by combinations of the new phonetic symbols, words may be printed without resorting to case shifts.

Since it is customary in the printing of sentences in Chinese to arrange the words in vertical alignment, beginning at the top and reading downward, the preferred manner of printing on the present machine is to provide type bars having the type arranged thereon in a horizontal position, i. e., at an angle of 90° with respect to the vertical sides of the bar. In this way the words are printed on paper held by the usual type of platen and carriage having a horizontal movement from right to left. It will, therefore, be seen that the symbols on the keys of the diagrammatic illustration thereof in Fig. 1 are disposed at a right angle with respect to the symbols shown in Figs. 2b to 2f, the latter being the normal or upright position of the characters. The symbols shown on the keys in Figs. 3 and 4 are also in their upright positions.

As stated hereinbefore, a Chinese word is usually composed of two or more symbols juxtaposed in a definite relation to each other within a "square." For this reason it is desirable that the carriage of the machine be prevented from moving horizontally until a word has been completed. In Fig. 5 there is shown mechanism designed for this purpose. An extension 27 on each type key is adapted to engage a universal bar 28 to which is attached a lever 29 pivoted to the machine frame. The lever is pivotally secured at 30 to a vertically movable ribbon carrier 31, the arrangement being such that, at each operation of a printing key, the ribbon is elevated and interposed between the type and the paper. After each word is completed, spacer bar 32 is depressed, rocking lever 33. The latter is connected to a ratchet release arm 34, pivoted at 35 to permit the carriage to move one space when the spacer bar is operated. The end 36 of lever 33 is adapted to engage the ratchet after release of the ratchet to prevent movement of the carriage, the combination of the release arm and spacer lever being arranged to provide for the proper spacing of the carriage between printing of separate words.

In the operation of the machine, the paper is inserted in the machine in a manner similar to that employed when writing European languages. However, because the printed sentences will be read vertically, the type are arranged on the bars in a horizontal position so that, as words are formed in sequence, the carriage will move horizontally and from right to left in the customary way. Furthermore, in Chinese, the formed vertical lines of words follow in a sequence from right to left. Hence, the type are so positioned on the bars that, when the platen is rotated to print other lines, the printed matter will not only form words which, when read in the normal manner, will be in vertical alignment, but the vertical lines follow each other from right to left.

While a preferred form of the invention has been shown and described, it is not intended that it be limited to the exact form illustrated, but is susceptible of modification, e. g., the symbols on the type bar may be arranged upright when used with a suitably mounted platen that permits vertical lines of typing.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A typewriter or the like for writing the Chinese language, comprising a keyboard and type

5

bars operated thereby, certain of said type bars each having a radical character type and a phonetic symbol type disposed in different printing positions on different case portions of the bar for writing respectively radicals and phonetic symbols in juxtaposed relation, the arrangement of the phonetic symbol type being such that initial and final phonetic symbol type are positioned on opposite sides of a medial of the bars and medial symbol type are positioned on said medial, there being a separate bar for each of said symbol types.

2. A typewriter or the like for writing the Chinese language, comprising a carriage, a keyboard and type bars having type blocks operated by the keys of said keyboard, certain of said type blocks each having a radical character type and a phonetic symbol type disposed in different printing positions thereon for writing respectively radicals and phonetic symbols in juxtaposed relation, some of the phonetic symbol type being disposed in a medial position on certain of said blocks, others of said phonetic symbol type being disposed in a position to one side of the medial or others of said blocks, and the remaining phonetic symbol type being disposed to the other side of the medial of another series of said blocks, a radical type being disposed on one case portion of each of said certain blocks and a phonetic symbol type being disposed on another case portion of each of said certain blocks, and carriage spacing means inoperative by said keys and type bars to permit writing of said radicals and symbols separately and in sequence in a square characteristic of Chinese writing without moving said carriage.

3. A typewriter or the like for writing the Chinese language, comprising a carriage, a keyboard

6

and type bars having type blocks operated by the keys of said keyboard, certain of said type blocks each having a radical character type and a phonetic symbol type disposed in different printing positions on different case portions of the block for writing respectively radicals and phonetic symbols in juxtaposed relation, said phonetic symbol type comprising initials, medials and finals, the phonetic symbol type representing medials being disposed in a medial position on certain of said blocks, the phonetic symbol type representing initials being disposed in a position to one side of the medial of others of said blocks, and the phonetic symbol type representing finals being disposed in a position to the other side of the medial of another series of said blocks, there being a separate block for each of said symbol type, and carriage spacing means inoperative by said keys and type bars to permit writing of said radicals and symbols separately and in sequence in a square characteristic of Chinese writing without moving said carriage.

TISHENG YEN.

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