

Description

The invention relates to a word typewriter for the display of written information having a keyboard with letter keys, whereby the keyboard includes in its centre a first group of keys for the vowels and on either side of said group in mirrored position a second and third group of consonant keys for a limited number of initial and final consonants respectively, a lower row of letter keys being operable by a typist's thumbs, the positioning of the keys being selected such that by the simultaneous operation of two keys each time missing letters, i.e. letters omitted from the keyboard, are formed by the typewriter, the letter keys also being operable for the formation of signs or numerals, and a further lower row of two sign keys operable by the thumbs. Such a word typewriter is known from the Dutch patent application 73.06584.

With such a word typewriter not only sequentially letter after letter but also a whole word or syllable may all at once be struck and printed by one stroke. Such a polyphonemic input in its case is done with both hands, which means that all fingers take part in the stroking process. The general principle is based upon four main types of syllables, namely;

1. only a vowel, e.g. "o" (in e.g. over)
2. initial consonant+vowel, e.g. "so"
3. vowel+final consonant, e.g. "os"
4. initial consonant+vowel+final consonant, e.g. "sos".

These groups may be extended by adding more vowels or consonants, e.g. "ou" instead of "o" or "u"; "stro" instead of "so"; "ar(t)s" instead of "as" or "os"; and "(s)treet" instead of "ses" or "sos"; etc.

In such a word typewriter monosyllabic words may be printed by one stroke. For that purpose two identical groups of consonants are available on the keyboard, and the vowels lie between said both groups, said vowels being mainly operated by the forefingers and possibly by the thumbs. Said known word typewriter is embodied such that syllables or words are formed as far as possible by striking as few slit positions as possible, i.e. stroke positions in which a finger is placed on two keys. One has provided for a phonetic or form context between the letters missing from the keyboard and those which take their place and which belong to a slit position, i.e. a stroke position in which a finger is placed on two keys such that those two keys are pressed simultaneously, which context is as logical as possible. Some letters on the keys may have a form deviating somewhat from the standard type, or use may be made of small and of capital letters such as to obtain symbolic suggestive forms recalling the standard forms.

Upon operation of this known word typewriter, however, one still obtains a shorthand

script of e.g. separate syllables or words laying vertically under each other. Also the above mentioned missing consonants are printed in this shorthand in a form resembling the form of the letters on the keys such that said consonants missing from the keyboard are not printed in the standard form.

On the letter keys on this known word typewriter signs or punctuation marks and numerals are also indicated. Such a sign (mark) or numeral may only be displayed by additionally striking each time a so called indicator key. In this way the signs, placed on the left group and right group of consonants respectively, are displayed by additionally striking the left and right key respectively of two additional thumb keys which are provided with the accentuations ' and '. Each sign is displayed by the printed combination of the letter of the key carrying the desired sign and an accentuation. A fixed indicator key, e.g. the "i", is used for the numerals 0 through 9 such that digits each time are displayed by the printed combination of the letter of the key carrying the desired digit and the letter "i".

The object of the invention is to obviate these problems and to provide a word or rapid typewriter, by which a running and complete script is obtained in a very fast manner, in which script the consonants missing from the keyboard are displayed or processed in standard form and also signs or numerals are displayed in a very simple manner in standard form.

According to the invention this is obtained by a word typewriter of the type indicated in the preamble such that for the selection on the one side of letters and on the other side of signs or numerals a shift key is provided, and that all keys are coupled to an electronic decoding and processing unit which, when a whole word or syllable is in one struck or when a letter is individually struck respectively, decodes signals from the, simultaneously or individually respectively, operated keys and subsequently supplies signals representing an ordered set of standard letters, signs or numerals, the combination of two simultaneously operated letter keys, which in form or sound resemble the image of a letter omitted from the keyboard, being processed into the standard display of said letter.

The above mentioned electronic decoding and processing unit may be embodied as a diode matrix and advantageously as a micro-processor.

With the aid of said word typewriter according to the invention slit positions between keys, to be actuated by fingers other than the forefinger, which actuation results in some tension in the related fingers, can be avoided as much as possible. Also less workable syllable combinations which contain a R, may also be represented in another manner and the number of required keys is limited by the combination of phonetic and/or form related letters in order to realise the consonants, missing from the key-

board both at the left and right side of the centre group of vowels.

The invention will now be further elucidated with reference to the drawing, in which:

Figure 1 is a view of the keyboard; and

Figure 2 is a block diagram of the mutual connection of the keyboard with the decoding and processing unit and a display, printing or memory device.

The keyboard indicated in Figure 1 resembles the keyboard indicated in the Dutch patent application 73.06584 with the exception, however, of some very important differences.

On the central vowel group of ten keys in the middle, the letter l (two times), O (two times), E (two times), U (once), A (once) and Y (once) are displayed while also the mark, (=comma) is indicated.

At the left hand and the right hand side in image position a limited number of consonants are indicated, namely the consonants Z, F, S, P, T, C, K, J, r. These keys are positioned such that the keys Z, F, S in principle can be operated by the little finger, the keys P, T, C can be operated by the ringfinger, the keys K, J, r can be operated by the middle finger, and the vowel keys in principle can be operated by the two forefingers.

Another row consisting of five thumb keys, is taken up below the above mentioned group of letter keys, the middle key of which other row is destined for the vowel Y, and the two left keys of which are destined for the letters L, n and the two right keys of which are destined for the letters n, L.

Furthermore signs or numerals are indicated on all above-mentioned keys, which signs or numerals are printed or processed with the aid of an additional thumb key, the so called shift key (indicated by SK in Figure 1) under the row of said five thumb keys, for shifting from letters to signs (marks) or numerals and vice versa. Another sign key is positioned at the left and at the right side respectively of this shift key which other sign keys respectively carry the accentuations ' and `.

Near the lower edge of the keyboard another pair of keys or preferably bars destined for the ball of the hands is positioned, namely at the left side the capital (uppercase) letter or small (lowercase) letter h-bar, the so called capital (h)-bar (indicated by cap(h) in figure 1), and at the right side the linking-up and space bar, the so called syllable connector-bar (indicated by SC (space) in Figure 1). In this case the decoding and processing unit decodes the signals from the left hand ball bar destined for the display of capital letters or small letter h respectively such that when this ball bar is pre-actuated separately the following syllable starts with a capital, and when said bar is actuated simultaneously with one or a plurality of other keys, representing initial consonants, it is displayed as letter h.

Unlike the usual typewriter the word type-

writer according to the invention is also embodied so that in connection with the decoding and processing unit a space occurs automatically after striking a syllable. As it is proved that monosyllabic words occur much more frequently than polysyllabic words in normal text this method gives a considerable reduction in manipulation. When one wants to link-up or connect the syllables as required in a polysyllabic word, for example in "to harden", accordingly after "har" the syllable "den" has to be struck simultaneously with the right hand ball bar (linking-up or antispace bar in this case), by which actuation the two syllables are displayed in connected condition. It is also possible to sequentially strike letter after letter in which case the said right ball bar functions as space bar. By this, one is capable with the aid of the decoding and processing unit to combine the two possibilities, and such that in the few cases in which it is required to separately strike the last letter of a syllable, e.g. in "fil-m" and "war-m", the right ball bar does not have to be actuated.

If at the end of a sentence the period is actuated, automatically the space is introduced via the decoding and processing unit, and also the first letter of the following syllable is displayed as a capital. In case a capital and a space is not required after a period, such as in "e.g.", one uses the left and right hand ball bars after "g." in order to avoid the printing of a capital and the generation of a space.

Therefore, both ball bars have important standard functions, namely the left bar for displaying a capital (and secondly and additionally h) and the right bar for linking-up syllables (and secondly for generating a space). When these bars are used beyond their main standard function, they have an inverse action. Namely in case of a period and preceding a single letter the left bar is used to avoid the display of said letter as a capital, and in case of sequential letter after letter display the right bar is used to separately display the space each time.

The major punctuation marks (period and comma) are simply obtained by the separate actuation of the O for the right hand (period) and the right j (comma) without the need in this case for actuating the shift key (SK).

Also the possibility is provided as mentioned earlier for displaying the following consonants at the beginning of a syllable: Z, S, F, P, T, C, K, J, r, L, n. These are eleven consonants. The missing nine consonants (for, the whole alphabet comprises 26-6=20 consonants) are obtained by combination of letters as follows:

B=P+J	H=J+L	V=L+r
D=T+J	M=r+n	W=J+H
G=C+J	Q=C+F	X=Z+K

If required other combinations of certain

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letters are possible, such as $V=F+J$ and $W=J+n$.

Furthermore the following final consonants can be displayed with the aid of the keyboard: n, l, k, j, r, p, t, c, f, s, z. These are eleven consonants.

The missing nine consonants again are obtained by mutual combinations, namely:

$B=P+J$	$H=J+L$	$V=F+J$
$D=T+J$	$M=r+n$	$W=J+H$
$G=C+J$	$q=C+F$	$X=K+Z$

Also in this case other combinations if required are possible, such as $V=L+R$ and $W=J+n$.

This system of combinations is based on the phonetic and/or form context between the struck letters and the missing consonants. By an adapted graphic composition of the letters on the keys, as indicated in Figure 1, one can utilize this form context. For example the letter F may be indicated somewhat inclining backwards, by which the combination FJ optically approaches the letter form V.

An example of the avoidance of slit positions in this invention for less suited fingers is the beginning syllable DR, GR, VR or WR. In order to strike this group one could place the middle finger on the slit between the J and the R. However, one can avoid this by striking the thumb key n (η) which by its form already recalls the n. In the said combinations this letter is represented or printed as a R due to the decoding and processing unit. Beginning consonant combinations DN, GN, BN, VN, and WN namely do not occur in the modern western languages. The letter W from the above mentioned initial combination WR is obtained in connection with the decoding and processing unit by simultaneously striking the J and the capital bar (cap (h)).

An example of the avoidance of tension in the fingers is the beginning consonant combination (S)PR, (S)TR or FR, which upon using the centrally placed r would not be so easy to operate. As an alternative to using R in this combination one can use the K beside the P on the upper row, which K may have a somewhat special form (K), by which in the said combinations it recalls the R and which is displayed as a R due to the decoding and processing unit.

Further examples of the avoidance of tension or strain during the operation of the keys are the following combinations (in which — means: part of the syllable), which are correctly displayed as standard letter(s) with the aid of the decoding and processing unit:

	to be actuated	display
	—TZ	—TS
5	—PZ	—PT
	—KT(S)	—CT(S)
10	Ol	A (in basic position)
	—CZ	—CH
	—GL	—GH
15	—GLZ	—GHT

In Figure 2 a simple block diagram is indicated of the manner in which the decoding and processing unit in the keyboard device and a further processing unit, such as a display-, printing- or memory unit, are connected to each other.

The keyboard 1 is connected via an input circuit 2 to the electronic decoding and processing unit 3. The electronic unit 3 reads the state of each of the keys with the aid of said input circuit, i.e. in order to determine whether a key is struck or not. On the basis of certain decoding rules provided in the electronic unit 3 subsequently certain letters, signs or numerals finally are supplied via the output circuit 4 to the display, printing or memory device 5.

The decoding and processing unit may be embodied as a microprocessor. The electronic unit is connected to the keyboard and the further processing unit 5 via an input/output circuit 2, 4 respectively. At regular timing intervals the keyboard is read out by the electronic unit, during which information about the state of the keyboard is received, which information is converted into a string of characters.

Each time it is established that, after the actuation of one or a plurality of keys, no further key is actuated anymore, this is signalled. This happens therefore at the point of time that all keys are released. This is called the signal "new-syllable". In a memory field LGA (=syllable display) it is indicated which keys are actuated since the last signal "new-syllable". Upon each signal "new-syllable" the contents of the memory field LGA are put in a cyclic buffer TBBuf (=keyboard buffer) which cyclic buffer may hold a plurality of these contents.

Regularly it is investigated whether there are LGA-contents yet in this cyclic buffer TBBuf. If the buffer TBBuf is not empty, the oldest LGA-contents present in the buffer are removed from this buffer and are decoded. That means that one or a plurality of letters, signs or numerals

are generated in accordance with the applicable rules therefore. The unit decodes the signals of the usually simultaneously struck keys into corresponding letters, inclusive those letters, omitted from the keyboard and brought about by the simultaneous actuation of two keys, and thereafter the unit places the thus obtained and unordered set of letters in the correct order in accordance with the applicable order or sequence rule. These ordered strings of characters (for example "syllables") are stored in a further memory in the decoding and processing unit and may subsequently be used for several purposes. For example they may be supplied via a data communication interface to a word processor, a further memory, such as a tape or magnetic disk, for later editing and/or printing, for displaying on a visual display device or as sub-title in a television image. The present device together with a trained operator is fast enough so as to make simultaneous translations.

The letters, signs or numerals displayed for example on a display device, may yet be erased with the aid of special keyboard functions, the operation of CR RC (=to correct) keys. This gives a correction possibility for the characters displayed on the display device.

When the cyclic buffer TBBuf is empty, the decoded contents of the memory field LGA are displayed in the last positions of the display device. This gives the operator of the keyboard a direct feedback to his strokes. This action with an empty TBBuf is not essential for the operation of the typewriter according to the invention.

The above indicated series of operations is normally repeated tens to hundreds of times per second. The use of a cyclic buffer gives also the possibility to conclude from time to time operations which are somewhat longer, e.g. the printing of a line on a display device which is of a duration of about 0.5 seconds, without any erasure of syllables inputted during this period. For, these syllables are put automatically in the cyclic buffer.

The timing intervals, during which the keyboard is read out, are selected such that they are small in relation to the speed the operator operates the keyboard (during each stroke the keyboard is at least read out a few times), but they are large in relation to the time that contact vibration may occur after striking or releasing of a key (characteristic for most keys are times between two and fifteen msec). In the present prototypes an interval time of 50 msec. is selected.

Apart from the simultaneously multi-key actuated generation of a series of letters as an ordered set, and of signs (or marks) or digits, the decoding and processing unit may provide for special operations with the aid of key combinations specially assigned for this purpose: the switching to a new line, the switching of

language (decoding rules) e.g., by which the keyboard is operated, etc.

As mentioned above numerals in standard form may also be displayed via the keyboard. Advantageously these numerals are indicated on the keys of the centrally placed vowel group such that the numeral 0 is positioned on the middle thumb letter key and the numerals 1, 2, 3 and 4, 5, 6 and 7, 8, 9 successively are positioned on the three rows of three vowel keys. In this manner this block of numerals has a form resembling a usual pocket calculator.

The word typewriter may advantageously be embodied such that the left two and the right two thumb letter keys respectively are provided with the signs +, -, :, x, and that the decoding and processing unit is provided with a computation circuit which in combination with a calculation function key outside the keyboard, realises the calculations adding, subtracting, dividing and multiplying together with the keys carrying said signs and numerals.

With this word or rapid typewriter according to the invention running and complete linguistic information of letters and/or signs and digits is displayed or processed in a very fast manner in standard form by the logic and simple construction of the keyboard in connection with the shift key thereon and the decoding and processing unit, whereby omitted letters are formed, difficult combinations are facilitated and slit positions are avoided. This typewriter is and can be used without any required knowledge of codes, abbreviations or shorthand typing symbols (except for the way the omitted letters are formed).

Claims

1. A word typewriter for the display of written information having a keyboard with letter keys, the keyboard including in its centre a first group of keys for vowels, and on either side of said group in mirrored position a second and third group of consonant keys for a limited number of initial and final consonants respectively, a lower row of letter keys being operable by typist's thumbs, the positioning of the keys being selected such that, by simultaneous operation of two keys, letters omitted from the keyboard are formed by the typewriter, the letter keys also being operable for the formation of signs or numerals, and a further lower row of two sign keys operable by the thumbs, characterized in that the word typewriter further comprises a shift key to selectively form letters and signs or numerals, and an electronic decoding and processing unit which, when a whole word or syllable is in one struck or when a letter is individually struck respectively, decodes signals from the, simultaneously or individually respectively, operated keys and subsequently supplies signals representing an ordered set of standard letters the combination of two simultaneously operated letter keys, which in form or

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are generated in accordance with the applicable rules therefore. The unit decodes the signals of the usually simultaneously struck keys into corresponding letters, inclusive those letters, omitted from the keyboard and brought about by the simultaneous actuation of two keys, and thereafter the unit places the thus obtained and unordered set of letters in the correct order in accordance with the applicable order or sequence rule. These ordered strings of characters (for example "syllables") are stored in a further memory in the decoding and processing unit and may subsequently be used for several purposes. For example they may be supplied via a data communication interface to a word processor, a further memory, such as a tape or magnetic disk, for later editing and/or printing, for displaying on a visual display device or as sub-title in a television image. The present device together with a trained operator is fast enough so as to make simultaneous translations.

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The word typewriter may advantageously be embodied such that the left two and the right two thumb letter keys respectively are provided with the signs +, -, :, x, and that the decoding and processing unit is provided with a computation circuit which in combination with a calculation function key outside the keyboard, realises the calculations adding, subtracting, dividing and multiplying together with the keys carrying said signs and numerals.

With this word or rapid typewriter according to the invention running and complete linguistic information of letters and/or signs and digits is displayed or processed in a very fast manner in standard form by the logic and simple construction of the keyboard in connection with the shift key thereon and the decoding and processing unit, whereby omitted letters are formed, difficult combinations are facilitated and slit positions are avoided. This typewriter is and can be used without any required knowledge of codes, abbreviations or shorthand typing symbols (except for the way the omitted letters are formed).

Claims

1. A word typewriter for the display of written information having a keyboard with letter keys, the keyboard including in its centre a first group of keys for vowels, and on either side of said group in mirrored position a second and third group of consonant keys for a limited number of initial and final consonants respectively, a lower row of letter keys being operable by typist's thumbs, the positioning of the keys being selected such that, by simultaneous operation of two keys, letters omitted from the keyboard are formed by the typewriter, the letter keys also being operable for the formation of signs or numerals, and a further lower row of two sign keys operable by the thumbs, characterized in that the word typewriter further comprises a shift key to selectively form letters and signs or numerals, and an electronic decoding and processing unit which, when a whole word or syllable is in one struck or when a letter is individually struck respectively, decodes signals from the, simultaneously or individually respectively, operated keys and subsequently supplies signals representing an ordered set of standard letters, the combination of two simultaneously operated letter keys, which in form or



* C L M S *

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sound resemble the image of a letter omitted from the keyboard, being processed into the standard display of said letter.

2. A word typewriter according to claim 1, comprising near the lower edge of the keyboard a bar for selection of capital-letter or small-letter display, said bar being operable by the ball of the typist's hand, characterized in that the decoding and processing unit decodes signals from the ball bar for capital-letter or small-letter display such, that when said ball bar is separately pre-operated the following syllable starts with a capital, and when said ball bar is operated simultaneously with one or a plurality of letter keys, representing initial consonants, a letter h is displayed.

3. A word typewriter according to claim 1, comprising near the lower edge of the keyboard a bar for selection of linking-up or space display, said bar being operable by the ball of the typist's hand, characterized in that the decoding and processing unit decodes signals from the ball bar for linking-up or space display such, that when said ball bar is operated simultaneously with a syllable then the said syllable is displayed linked-up with the preceding syllable or when said ball bar is operated separately when operating letter after letter, the said letters in the letter after letter display are displayed with space therebetween.

4. A word typewriter according to one of the preceding claims, wherein on a number of letter keys also the numerals 0 through 9 are provided, characterized in that the numerals are distributed over the centre vowel group such that the numeral 0 is placed on the middle thumb letter key, and the numerals 1, 2, 3 and 4, 5, 6 and 7, 8, 9 successively are placed on three rows of three vowel keys.

5. A word typewriter according to claim 4, wherein the row of thumb letter-keys consists of five keys, characterized in that on the left two and on the right two thumb letter keys respectively the signs +, -, :, x are provided, and the decoding and processing unit comprises a computation circuit, which in combination with a calculation function key outside the keyboard and together with the keys carrying said signs and numerals realises the calculations of adding, subtracting, dividing, and multiplying.

6. A word typewriter according to claim 1, characterized in that chord combinations of initial consonants and final consonants, which do not exist in normal language and which are simultaneously actuated, are decoded in the decoding and processing unit to provide for specific keyboard functions, such as correction, line switching, language switching (decoding rules), etc.

Patentansprüche

1. Wörter-Schreibmaschine zur Darstellung von geschriebener Information, welche Wörter-Schreibmaschine mit einer Tastatur mit Buch-

stabentasten versehen ist, wobei die Tastatur in ihrem Zentrum eine erste Gruppe von Tasten für Vokale und beidseitig von dieser ersten Gruppe in spiegelsymmetrischer Anordnung eine zweite und eine dritte Gruppe von Konsonantentasten für eine begrenzte Anzahl von Anfangs- bzw. Endkonsonanten, eine untere Reihe von vom Daumen der schreibenden Person betätigbaren Buchstabentasten, wobei die Positionierung der Tasten so gewählt ist, dass durch gleichzeitige Betätigung von zwei Tasten in der Tastatur ausgelassene Buchstaben von der Schreibmaschine gebildet werden, wobei die Buchstabentasten auch zur Bildung von Zeichen und Ziffern betätigbar sind, und eine weitere untere Reihe von zwei von Daumen betätigbare Zeichentasten umfasst, dadurch gekennzeichnet, dass die Wörter-Schreibmaschine weiter eine Umschalttaste zur selektiven Bildung von Buchstaben und Zeichen oder Ziffern und eine elektronisch Dekodier- und Verarbeitungseinheit umfasst, welche, wenn ein ganzes Wort oder eine ganze Silbe einen einzigen Anschlag bilden beziehungsweise wenn ein Buchstabe einzeln angeschlagen wird, Signale von den gleichzeitig beziehungsweise einzeln betätigten Tasten dekodiert und anschliessend Signale abgibt, die einen geordneten Satz von Normbuchstaben darstellen, wobei die Kombination von zwei gleichzeitig betätigten Buchstabentasten, die in Form oder Klang dem Bild eines in der Tastatur ausgelassenen Buchstaben ähnlich ist, zur Normdarstellung dieses Buchstabens verarbeitet wird.

2. Wörter-Schreibmaschine nach Anspruch 1, in Nähe des unteren Randes der Tastatur einen Balken zur Auswahl der Darstellung von Gross- oder Kleinbuchstaben umfassend, wobei dieser Balken von Handballen der schreibenden Person betätigbar ist, dadurch gekennzeichnet, dass die Dekodier- und Verarbeitungseinheit Signale vom Handballen-Balken zur Darstellung von Gross- oder Kleinbuchstaben auf solche Weise dekodiert, dass, wenn dieser Handballen-Balken im vorhinein separat betätigt wird, die nachfolgende Silbe mit einem Grossbuchstaben beginnt, und wenn dieser Handballen-Balken gleichzeitig mit einer oder mehreren Anfangskonsonanten darstellenden Buchstabentasten betätigt wird, der Buchstabe h dargestellt wird.

3. Wörter-Schreibmaschine nach Anspruch 1, in Nähe des unteren Randes der Tastatur einen Balken zur Auswahl von bündiger oder beabstandeter Darstellung umfassend, wobei dieser Balken vom Handballen der schreibenden Person betätigbar ist, dadurch gekennzeichnet, dass die Dekodier- und Verarbeitungseinheit Signale vom Handballen-Balken zur bündigen oder beabstandeten Darstellung auf solche Weise dekodiert, dass, wenn dieser Handballen-Balken gleichzeitig mit einer Silbe betätigt wird, diese Silbe dann bündig mit der vorangehenden Silbe dargestellt wird, oder wenn dieser Handballen-Balken bei einer



Betätigung Buchstabe für Buchstabe separat betätigt wird, diese Buchstaben in der Darstellung Buchstabe für Buchstabe mit einem dazwischenliegenden Abstand dargestellt werden.

4. Wörter-Schreibmaschine nach einem der vorangehenden Ansprüche, in welcher auf einer Anzahl von Buchstaben auch die Ziffern 0 bis 9 vorgesehen sind, dadurch gekennzeichnet, dass die Ziffern über die zentrale Vokalengruppe auf solche Weise verteilt sind, dass die Ziffer 0 auf der mittleren für den Daumen bestimmte Buchstabentaste angeordnet ist und die Ziffern 1, 2, 3 und 4, 5, 6 und 7, 8, 9 nacheinander auf drei Reihen von drei Vokaltasten angeordnet sind.

5. Wörter-Schreibmaschine nach Anspruch 4, in welcher die Reihe von für den Daumen bestimmten Buchstabentasten aus fünf Tasten besteht, dadurch gekennzeichnet, dass auf den zwei linken und auf den zwei rechten für den Daumen bestimmten Buchstabentasten jeweils die Zeichen +, -, :, x angeordnet sind und die Dekodier- und Verarbeitungseinheit eine Rechenschaltung umfasst, die in Kombination mit einer ausserhalb der Tastatur liegenden Rechenfunktionstaste und zusammen mit den diese Zeichen und Ziffern tragenden Tasten die Addier-, Subtrahier-, Dividier- und Multiplizierberechnungen durchführt.

6. Wörter-Schreibmaschine nach Anspruch 1, dadurch gekennzeichnet, dass Gruppenkombinationen von Anfangs- und Endkonsonanten, die in der normalen Sprache nicht existieren und gleichzeitig betätigt werden, in der Dekodier- und Verarbeitungseinheit dekodiert werden, um spezifische Tastaturfunktionen wie Korrektur Zeilenschaltung, Sprachenschaltung (Dekodierregeln) usw. zu ergeben.

Revendications

1. Machine à écrire des mots pour l'affichage d'information écrite, possédant un clavier à touche littérales, ce clavier comprenant en son centre un premier groupe de touche pour voyelles et de chaque côté de ce groupe en position de symétrie miroir un deuxième et un troisième groupe de touches pour consonnes prévues pour un nombre limité de consonnes respectivement initiales et finales, une rangée inférieure de touches littérales étant actionnables par le pouce du dactylographe, le positionnement des touches étant choisi de telle façon que par l'actionnement simultané de deux touches des lettres omises du clavier sont formées par la machine à écrire, les touches littérales étant aussi actionnables pour la formation de signes et de chiffres, et comprenant en outre une rangée inférieure de deux touches significantes actionnables par le pouce, caractérisée en ce que la machine à écrire du texte comprend en outre une touche de commutation pour former sélectivement des lettres et des signes ou des chiffres et une unité électronique de décodage et de traitement, la-

quelle, lorsqu'un mot entier ou une syllabe entière sont d'une seule frappe ou respectivement lorsqu'une lettre est frappée individuellement, décode les signaux des touches actionnées simultanément ou respectivement individuellement et ensuite fournit des signaux représentatifs d'un ensemble ordonné de lettres normales, la combinaison de deux touches littérales actionnées simultanément qui, par leur forme ou leur consonance ressemblent à l'image de la lettre omise du clavier, étant traitée pour donner l'affichage normal de cette lettre.

2. Machine à écrire des mots selon la revendication 1, comprenant au voisinage du bord inférieur du clavier une barre pour la sélection de l'affichage en lettres majuscules ou minuscules, cette barre étant actionnable par le thénar de la main du dactylographe, caractérisée en ce que l'unité de décodage et de traitement décode les signaux de la barre de thénar pour l'affichage en lettres majuscules ou minuscules de telle manière que, lorsque cette barre de thénar est préalablement actionnée séparément, la syllabe suivante commence par une majuscule, et lorsque cette barre de thénar est actionnée simultanément avec une ou plusieurs touches littérales représentant des consonnes initiales, une lettre h est affichée.

3. Machine à écrire des mots selon la revendication 1, comprenant au voisinage du bord inférieur du clavier une barre pour la sélection de l'affichage jointif ou espacé, cette barre étant actionnable par le thénar de la main du dactylographe, caractérisée en ce que l'unité de décodage et de traitement décode les signaux de la barre de thénar pour l'affichage jointif ou espacé de telle manière que, lorsque cette barre de thénar est actionnée simultanément avec une syllabe, cette syllabe est alors affichée jointe à la syllabe précédente, ou lorsque cette barre de thénar est actionnée séparément pendant un actionnement lettre par lettre, ces lettres de l'affichage lettre par lettre sont affichées avec un espace intercalé entre elles.

4. Machine à écrire des mots selon l'une des revendications précédentes, dans laquelle sont prévus sur un certain nombre de touches littérales aussi les chiffres 0 à 9, caractérisée en ce que les chiffres sont distribués sur le groupe central de voyelles de telle manière que le chiffre 0 est placé sur la touche littérale médiane destinée au pouce et que les chiffres 1, 2, 3 et 4, 5, 6 et 7, 8, 9 sont placés successivement sur trois rangées de trois touches pour voyelles.

5. Machine à écrire des mots selon la revendication 4, dans laquelle la rangée de touches destinées au pouce est constituée de cinq touches, caractérisée en ce que sur les deux touches littérales destinées au pouce situées respectivement à gauche et à droite il est prévu les signes +, -, :, x et que l'unité de décodage et de traitement comprend un circuit de calcul qui en combinaison avec une touche



(16)

de fonction de calcul située à l'extérieur du clavier et ensemble avec les touches portant ces signes et chiffres réalise les calculs d'addition, de soustraction, de division et de multiplication.

6. Machine à écrire des mots selon la revendication 1, caractérisée en ce que les combinaisons groupées de consonnes initiales et

finales qui n'existent pas dans le langage normal et qui sont actionnées simultanément sont décodées dans l'unité de décodage et de traitement pour fournir des fonctions spécifiques de clavier telles que la correction, la commutation de lignes, la commutation de langage (règles de décodage) etc.

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