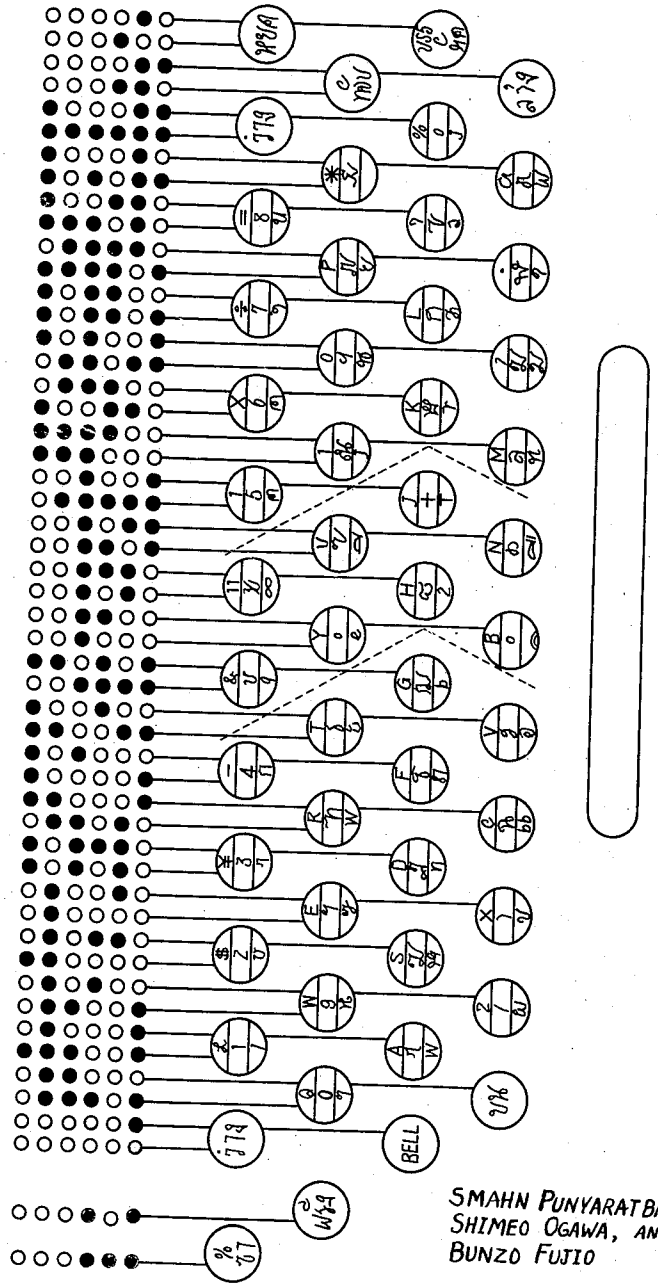
Jan. 24, 1961 SMAHN PUNYARATBAND ET AL 2,969,429

TELEPRINTER RECEIVING APPARATUS

Original Filed Oct. 17, 1956

2 Sheets-Sheet 1

Fig. 1



SMAHN PUNYARATBAND,
SHIMEO OGAWA, AND
BUNZO FUJIO

INVENTORS

BY Wenderoth, Lind & Ponack

ATTORNEYS

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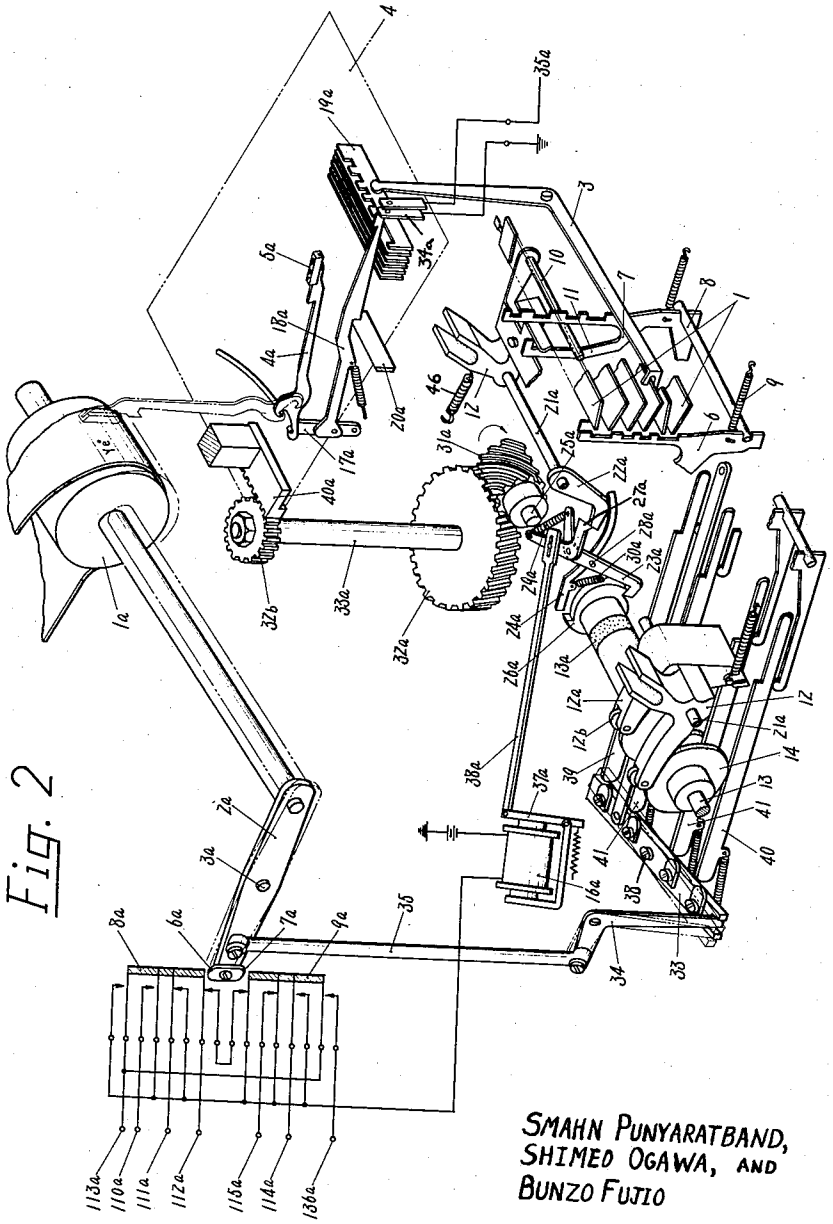


Fig. 2

SMAHN PUNYARATBAND,
SHIMEO OGAWA, AND
BUNZO FUJIO

INVENTORS

BY Wenderoth, Lind
and Ponack

ATTORNEYS

United States Patent Office 2,969,429
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2,969,429

TELEPRINTER RECEIVING APPARATUS

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Original application Oct. 17, 1956, Ser. No. 616,398, now Patent No. 2,935,567, dated May 3, 1960. Divided and this application Feb. 1, 1960, Ser. No. 5,850

Claims priority, application Japan Dec. 24, 1955

3 Claims. (Cl. 178—25)

This invention relates to a teleprinter receiving apparatus, and more particularly to an apparatus in which the spacing function is eliminated at certain times in the operation of the apparatus.

This application is a division of our application Serial No. 616,398, filed October 17, 1956, now Patent No. 2,935,567, issued May 3, 1960.

An object of this invention is to provide a teleprinter apparatus adaptable for use with either the English language or a language such as Thai, Burmese or Indian.

A teleprinter keyboard which is standard for the Thai language has 42 keys, each having two characters thereon. The operation of the device on which the keyboard may be placed is similar to a device with a keyboard for use with the English language, in that to obtain the second character on the key, a shift key is utilized which adjusts the position of the carriage of the device, or alternatively the position of the type carrying bars, so that the second character strikes the platen of the machine rather than the first. In the Thai language, however, the second set of characters are not capitals, but are separate and different characters. The 42 keys have 16 Thai vowels, 54 Thai consonants, 10 numerals, parentheses and two punctuation marks.

In the Thai language as in Burmese, Indian and Japanese, certain vowels and certain consonants are combined in one character to produce a complete letter. On the typewriters and teleprinter machines for use exclusively with these languages, certain of the keys using the combinable vowels are disconnected from the spacing mechanism so that a second key may be struck and a second character produced in the same space as the vowel to produce the complete letter.

However, when a device for use with both English and one of the above languages is constructed, the keys with the combinable vowels for the Thai or like language cannot be completely disconnected from the spacing mechanism because the English letters on the same keys occur only one to a space. Therefore it is necessary that when the Thai vowel is to be reproduced on the platen, the machine must not space, whereas when the English letter is to be reproduced on the platen, the machine must space.

It is therefore an object of the present invention to provide a teleprinter receiving apparatus for use with both English letters and letters in Thai or a like language, in which, when certain Thai letters are reproduced, the spacing function of the machine is eliminated, whereas when the English letter on the same key is to be reproduced, the machine will space normally.

The preferred embodiments of a device according to the invention are described in the following specification and are shown in the accompanying drawings, in which:

Fig. 1 shows a keyboard for use with a combined English-Thai Teletype machine;

Fig. 2 shows a perspective view of the essential parts of a form of the device according to the invention, in which some of the parts are shown partially in section.

There is shown in Fig. 1 a keyboard which will be helpful in understanding the operation of the device according to the invention. The upper characters on the keys correspond generally to the characters on a teleprinter or typewriter for use in the English language, while the characters in the middle and on the bottom of the keys are standard for a Teletype or typewriter for the Thai language. The eight keys outlined by the dotted lines at approximately the center of the keyboard contain the Thai vowels which occur in the same space as a consonant and combine with that consonant to form a complete letter. When striking one such key to reproduce either of the Thai vowels, it is desirable that the spacing function of the machine be eliminated, but when striking the key to reproduce the English letter thereon it is desirable that the machine space normally.

The platen **1***a* is pivoted to the apparatus on a rocker arm **2***a* pivoted about the pivot **3***a*. A plurality of type bars **4***a*, only one of which is shown, are pivoted in a conventional manner to be actuated by the type bar levers **17***a*, only one of which is shown, which type bar levers are in turn actuated by the pull bars **18***a*. The end of each type bar **4***a* carries the type **5***a* with three characters thereon, and all of the type bars **4***a*, the type bar levers **17***a* and the pull bars **18***a* together form a type basket (not shown). On the portion of the rocker arm **2***a* on the opposite side of pivot **3***a* from the platen **1***a* is pivoted a connecting rod **35** which is pivoted at its lower end to a bell crank **34**. Bell crank **34** is pivoted on the apparatus so that the free end thereof reciprocates in a horizontal plane. A shift lever **33** having a notch in the end thereof is engaged by means of the notch with the free end of the bell crank **34**, and is pivoted for horizontal movement around the pivot **38**. Engaged with the shift lever **33** are a series of push bars which are adapted to pivot the shift lever about the pivot **38**. Push bar **40** is adapted to pivot lever **33** sufficiently to lower the platen **1***a* an amount which enables the type **5***a* to strike the platen at the lowest point on the type, while push bars **41** move the shift lever **33** sufficiently to enable the middle portion of the type **5***a* to strike the platen **1***a*. The push bar **38** pivots the shift lever **33** in the opposite direction to lift the platen **1***a* so that the upper portion of the type **5***a* strikes the platen. The type basket is slidable parallel to the platen **1***a* under the action of the gear **32***b* acting on the rack **40***a*. Gear **32***b* is connected to gear **32***a* by a shaft **33***a*, and gear **32***a* is driven by a worm gear **31***a* on a shaft **25***a*. A series of six code bars **19***a* is also provided in the type basket in the path of the movement of the pull bars **18***a*, the machine being for six unit codes. A selector vane **1** is provided for each unit code and is connected with a selector part (not shown) to rotate about a shaft **2**. Each selector vane **1** is connected with a code bar **5** by a bell crank **3** (only one of which is shown).

A pair of operating arms **12** are mounted on an operating shaft **21***a*. A strong spring **46** attached to one operating arm urges the operating arms to rotate with operating shaft **21***a* in one direction.

On the other of the operating arms **12** is an arm **12***a* having a roller **12***b* on the end thereof. Beneath the roller **12***b* and contacted thereby is an operating cam **14**. Cam **14** is mounted on a shaft **13** which is rotated when the machine receives a signal to type a letter on the platen. Worm gear **31***a* is mounted on a shaft **25***a* frictionally engaged with shaft **12** by a frictional connection **13***a*.

The operating shaft **21***a*, which is driven from the cam **14** on the shaft **13**, is positioned beneath the type basket and carries a bail **20***a* on arm **12** which engages with a lug on the lower side of the pull bar **18***a*. When the bail **20***a* pivots, it pulls the pull bar **18***a* so that the

pull bar slides in the grooves in the code bars in the conventional manner and pivots the type bar 4*a* through the type bar lever 17*a*. On the other end of the bail is a spacer bail 22*a*.

Mounted on shaft 25*a* is a ratchet wheel 26*a* having three teeth thereon (only two of which are shown) and two escapement pawls 23*a* and 24*a* are pivoted at 28*a* and have bent over arms on one end thereof in engagement with two of the teeth on the ratchet wheel 23*a*. The two escapement pawls are connected by a spring 30*a*. The escapement pawls 24*a* extend to a point beneath the end of the spacer bail 22*a*, while the end of the escapement pawl 23*a* opposite the end engaged with the ratchet wheel 26*a* has pivoted thereto a spacer control crank 27*a*. One end of the crank extends to a point over the end of the spacer bail 22*a*, while the other end is connected to a spacer control link 38*a*. The end of the spacer control crank 27*a* connected to the spacer control link 38*a* and the end of the pawl 23*a* to which the spacer control crank is pivoted are connected by a spring 29*a*.

The spacer control link 38*a* is actuated by an electro-magnet 16*a* having an arm 37*a* to which the other end of the spacer control link is pivoted, and which arm is actuated by the electro-magnet. The electro-magnet 16*a* is grounded.

The energising controls for the electro-magnet comprise a switch which is actuated by the free end of the rocker arm 2*a* and contacts actuated by certain of the pull bars 18*a*. The switch is of the make and break contact type and has two insulating blocks 8*a* and 9*a* positioned one above and one below the free end of the rocker arm 2*a*. The rocker arm 2*a* has insulators 6*a* and 7*a* on the top and bottom of the end of the rocker arm 2*a* respectively. Four flat spring contacts are attached to each of the insulating blocks 8*a* and 9*a* so as to be spaced from each other. In the case of the upper block 8*a*, the contact nearest the insulator 6*a* is connected to a line 112*a*, the next contact is connected to a line 111*a*, the third contact is connected to the electro-magnet 16*a* and the fourth contact is connected to the line 113*a*. A stationary contact is provided which contacts the contact nearest contact member when the platen 1*a* is in the middle position and the rocker arm 2*a* does not move either of the insulating blocks 8*a* or 9*a*, this condition hereafter being called the middle position. The second contact is provided with a stationary contact which makes contact in the middle position and is connected to the electromagnet 16*a*. The third contact is provided with a stationary contact which makes contact in the lower position of the platen, that is when the end of the rocker arm 2*a* which has the insulators 6*a* and 7*a* on the end thereof is in the raised position, and is connected with a line 110*a*. The fourth contact is provided with a stationary contact which also makes contact in the lower position of the platen and is connected to the electro-magnet 16*a*.

In the case of the lower block 9*a*, the contact nearest the rocker arm 2*a* is connected to the electro-magnet 16*a*, the second is also connected to the electro-magnet, the third is connected to a line 114*a* and the fourth is connected to the fourth contact of the upper insulating block 8*a* and thus to line 113*a*. The first contact for the lower block 9*a* is provided with a stationary contact which makes contact in the middle position of the platen and which is connected to the stationary contact for the first contact of the upper block 8*a*. The second contact is provided with a stationary contact which makes contact in the middle position of the platen and which is connected to a line 115*a*. The third contact is provided with a stationary contact which makes contact when the platen is in the upper position and which is connected to the electro-magnet 16*a*. A line 136*a* is also provided which is connected to the electro-magnet 16*a* in all positions of the platen.

As a result of these switch connections, the line 113*a* will be connected to the electro-magnet 16*a* when the platen is in the upper or lower position, the line 110*a* will be connected with the electro-magnet only when the platen is in the lower position, the line 111*a* will be connected with the electro-magnet when the platen is in the upper or middle position, the line 112*a* will be connected with the electro-magnet when the platen is in the middle position only, the line 115*a* will be connected with the electro-magnet when the platen is in the lower or middle position, and the line 114*a* will be connected with the electro-magnet when the platen is in the upper position only. The line 136*a* will always be connected with the electro-magnet in all positions of the platen.

In the path of the rearward motion of the pull bars 18*a* which actuate type bars 4*a* having Thai vowels in one or more positions thereon which require that the spacing function be eliminated are a series of spring contacts 34*a*, one for each such pull bar. One side of the contact is grounded and the other side is connected by a line 35*a* to one of the lines on the switch for controlling the electro-magnet 16*a*. The contacts are normally open, and are closed when the particular pull bar 18*a* is moved rearwardly to cause the type on the type bar actuated thereby to strike the platen. Depending on the letters on the type, the line 35*a* can be connected to one of the lines 110*a*, 111*a*, 112, 113*a*, 114*a* or 115*a*. Thus, if the letters on the type are an English letter on the top, and two Thai vowels which require that the spacing function be eliminated in the other two positions, the line 35*a* is connected to the line 111*a* so that when the platen is in the lower position the electro-magnet 16*a* will not be energised, but when the platen is in the upper or middle position, the electro-magnet will be energised. If only the lower letter on the type requires elimination of the spacing function, then the line 35*a* of the contact to the rear of the pull bar for this type is connected to line 114*a*, thus causing the electro-magnet to be energised only when the platen is in the upper position.

In operation, when a signal is received to type a letter in English which is on the upper row of characters on the type, the lower two rows carrying Thai vowels which require that the spacing function be eliminated, the conventional shift mechanism will shift the platen 1*a* to the lower position. This will cause the rocker arm 2*a* to pivot about the pivot 3*a*, and will cause the insulator 6*a* to lift the insulating block 8*a* upwardly. This will bring only the lines 115*a*, 113*a* and 110*a* into connection with the electromagnet 16*a*. At the same time the operating shaft 21*a* will be rotated from rotation of shaft 13 and cam 14, thereby rotating bail 20*a* and moving pull bar 18*a* to the rear to cause the type bar with the proper letter thereon to pivot upwardly and strike the platen. The contact 34*a* to the rear of the pull bar actuated will be connected to the line 111*a*, which is not connected to the electro-magnet 16*a* when the platen is in the lower position, but only when the platen is in the middle or upper position when the Thai vowels are struck on the platen. The electro-magnet 16*a* will therefore not be energised, and the spacer control link 38*a* will not move the spacer control crank 27. Thus the spacer bail 22*a*, which is moved upwardly at the same time as the pull bar is moved to the rear will strike the spacer control crank 27*a* and will thus pivot the escapement pawl 23*a* and free the end thereof from engagement with the tooth on the ratchet wheel 26*a*. When the bail 22*a* returns to its normal position it will strike the other escapement pawl 24*a* and free it from the ratchet wheel 26*a*. The ratchet wheel is thus freed to move and will rotate worm gear 25*a* thereby spacing the type basket through the gears 32*a* and 32*b* and the rack 40*a*.

If, on the other hand, the signal requires that one of the Thai vowels on the same type be reproduced, the shift mechanism will cause the platen to remain in the

middle position or be moved to the upper position. This in turn will cause, in the middle position, the lines **111***a*, **112***a* and **115***a* to be connected to the electro-magnet, and in the upper position, the lines **111***a* and **114***a* to be connected to the electro-magnet. The contact **34***a* to the rear of the pull bar **18***a* being connected to the line **111***a*, when the contact is closed, the electro-magnet will be energised, and the spacer control link **38***a* will move when the arm **37***a* is drawn against the magnet. This will cause the spacer control crank **27***a* to be pivoted out of the path of the bail **22***a*. Bail **22***a* cannot, therefore, cause the escapement pawl **23***a* to move out of engagement with the tooth on the ratchet wheel **26***a*, and the apparatus will not space.

It is not necessary that the English letters be on the top of the type **5***a*. All three characters on the type can be English letters or Thai letters for which spacing is required, in which case no contact **34** is required. All three characters can be Thai vowels which require that the spacing function be eliminated, in which case the contact **34** is connected to line **136***a*. In this instance the electro-magnet **16***a* will be energised in every position of the platen. The English letter could be on the bottom of the type, in which case the platen would have to be at the upper position to be struck thereby. In this instance, the contact **34** would be connected to line **115***a*, which would energise the electromagnet and thus eliminate the spacing function only when the platen is in the middle or lower position. From the foregoing, other combinations will be apparent to those skilled in the art.

It is thought that the invention and its advantages will be understood from the foregoing description and it is apparent that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing its material advantages, the forms hereinbefore described and illustrated in the drawings being merely preferred embodiments thereof.

Having thus disclosed the invention, what is claimed is:

1. In a teleprinter receiving apparatus having a shiftable platen, a plurality of type bars forming a type basket, means for actuating the type bars for striking the platen, code bars for selecting which of the type bars are to be actuated, operating means operable in response to a received signal for operating the actuating means, means having a ratchet and pawls therein for spacing the type basket along an axis parallel to the platen each time the operating means actuates the actuating means, a bail driven by the actuating means and acting on the pawls, and type mounted on the type bars having a plurality of characters thereon, at least one character of which is such as to require that the spacing means not space the type basket when said one character is struck

on the platen, the combination of shift means operable in response to the received signal for shifting the platen into one of three positions for being struck by one of the characters on said type, and a spacer control member pivoted to one of the pawls, and electro-magnetic means pivotally connected to said spacer control member and actuated by the shift means for pivoting said spacer control member out of the path of the bail, thereby preventing the operation of said ratchet and pawls and when the shift means has shifted the platen to a position to be struck by said one character.

2. In a teleprinter receiving apparatus having a platen mounted on a rocker arm for shifting movement to a plurality of shift positions, a plurality of type bars forming a type basket, means for actuating the type bars for striking the platen comprising an operating shaft with an operating bail thereon and pull levers actuated by the operating bail, code bars for selecting which of the type bars are to be actuated, operating means operable in response to a received signal for operating the operating shaft, means having a ratchet and pawls therein for spacing the type basket along an axis parallel to the platen each time the operating means actuates the operating shaft, a bail driven by the operating shaft and acting on the pawls, and type mounted on the type bars having a character thereon for each of the shift positions, at least one character of which is such as to require that the spacing means not space the type basket when said one character is struck on the platen, the combination of shift means operable in response to the received signal for pivoting the rocker arm on which the platen is mounted into one of the plurality of positions for being struck by one of the characters on said type, a spacer control crank pivoted to one of the pawls, an electro-magnet having a spring loaded arm thereon linked to said spacer control crank, and selector means for energising said electro-magnet for pivoting the spacer control crank out of the path of the bail comprising contacts in the path of the pull levers for the type bars having the characters thereon which require the elimination of the spacing function and switch means actuated by the pivoting of the rocker arm carrying the platen for selectively energising the electro-magnet when said contacts are closed under the effect of the actuating means and the rocker arm has shifted the platen to the position in which the platen is to be struck by the character requiring the elimination of the spacing function.

3. The improvement as claimed in claim 2 in which said switch means comprise a make-and-break type contact in which the contacts are made and broken by the action of the free end of the rocker arm thereon.

No references cited.