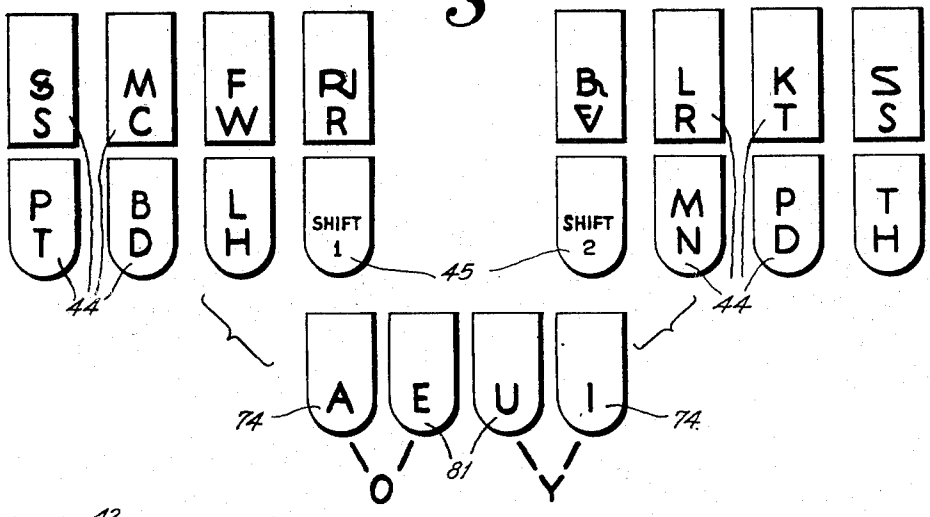
Oct. 7, 1952 H. M. VON DUYKE 2,612,977

TYPE BAR OPERATING MECHANISM FOR STENOGRAPHIC TYPEWRITERS

Original Filed Oct. 18, 1947 4 Sheets-Sheet 1

Fig. 1



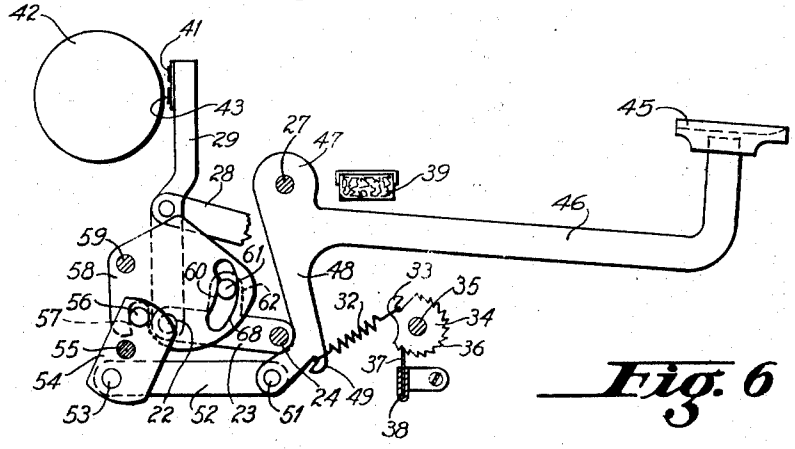


Fig. 6

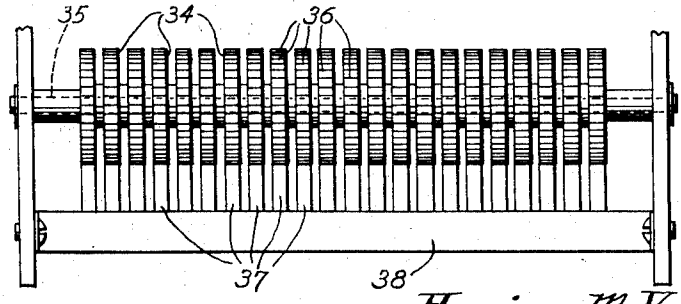


Fig. 10

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TYPE BAR OPERATING MECHANISM FOR STENOGRAPHIC TYPEWRITERS

Original Filed Oct. 18, 1947 4 Sheets-Sheet 2

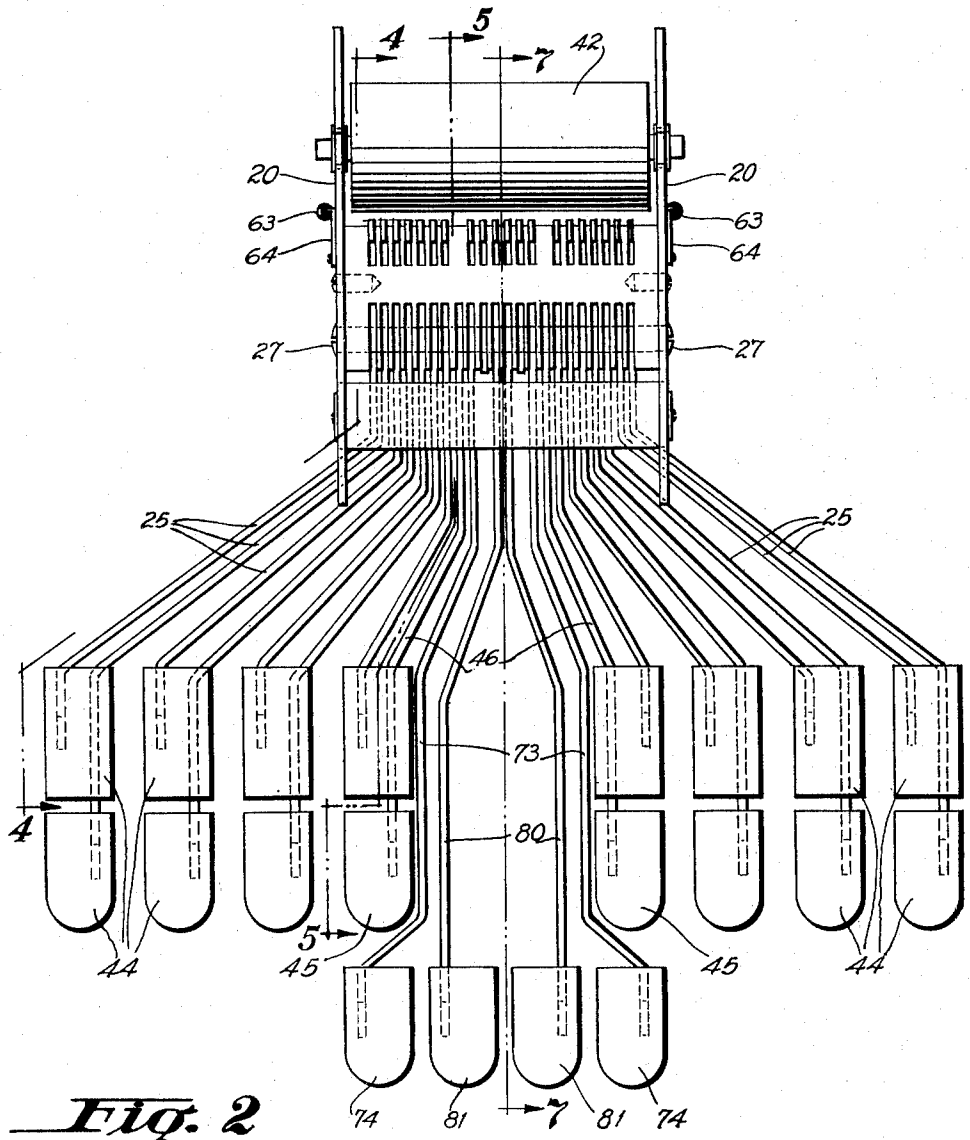


Fig. 2

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TYPE BAR OPERATING MECHANISM FOR STENOGRAPHIC TYPEWRITERS

Original Filed Oct. 18, 1947 4 Sheets-Sheet 3

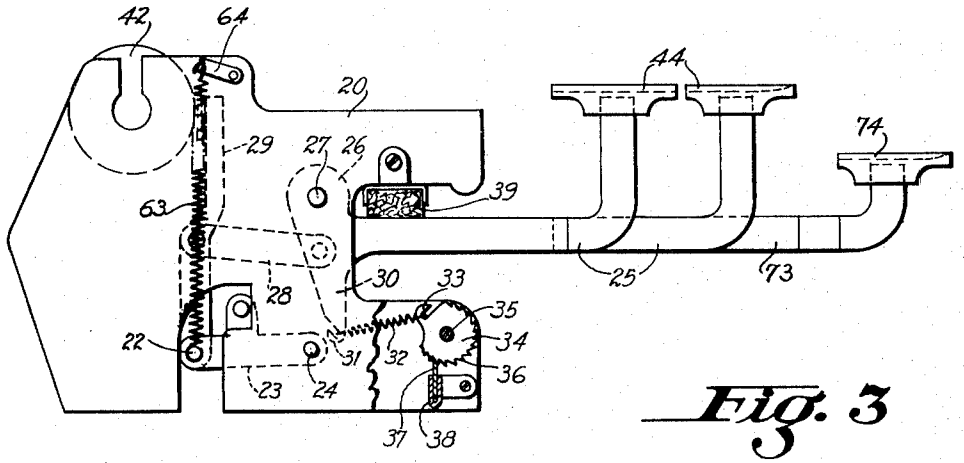


Fig. 3

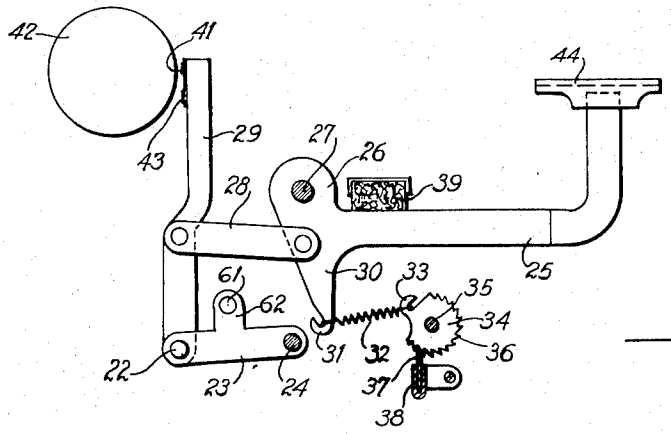


Fig. 4

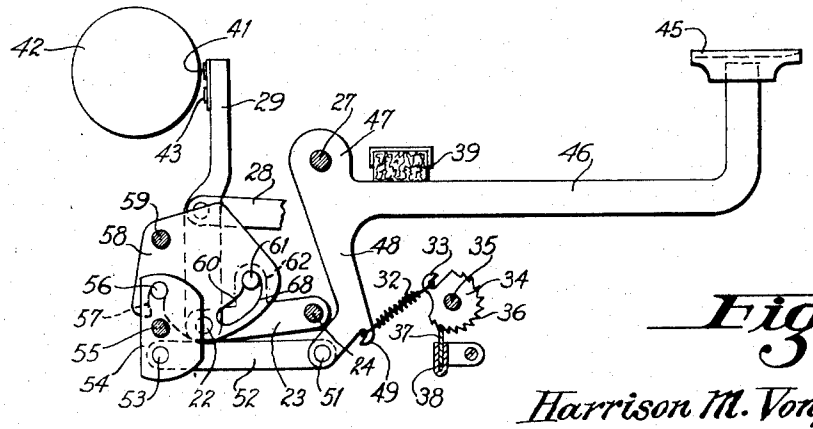


Fig. 5

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TYPE BAR OPERATING MECHANISM FOR STENOGRAPHIC TYPEWRITERS

Original Filed Oct. 18, 1947 4 Sheets-Sheet 4

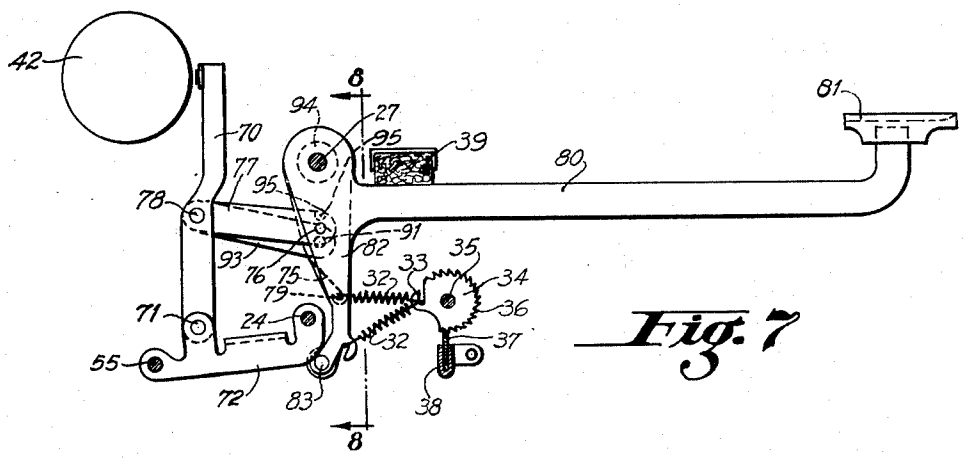


Fig. 7

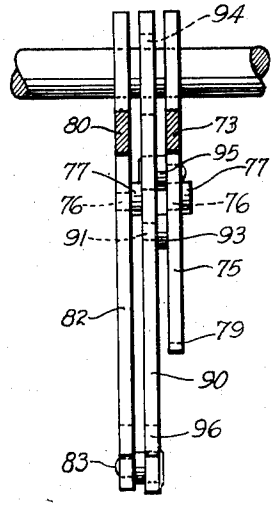


Fig. 8

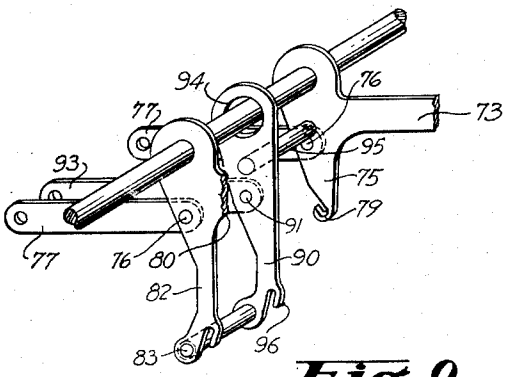


Fig. 9

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Patented Oct. 7, 1952 2,612,977

UNITED STATES PATENT OFFICE

2,612,977

TYPE BAR OPERATING MECHANISM FOR STENOGRAPHIC TYPEWRITERS

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Original application October 18, 1947, Serial No. 780,607. Divided and this application March 14, 1950, Serial No. 149,497

4 Claims. (Cl. 197—9)

1

This invention relates to stenographic typewriters and it relates more particularly to a typewriter of the kind in which a plurality of type impressions may be made simultaneously for the purpose of making a record of spoken words, which record will be more legible and more easily read than is the case with hand written stenographic records.

In machines of this character, the record is usually made upon a strip of paper fed over a platen without any longitudinal feed of the paper as in ordinary typewriting machines.

Also, in machines of this character the speed is largely dependent upon the more or less the greatest possible number of combinations to "natural" arrangement of the operating keys, which are so disposed and located as to permit be made at the same time. It has been found in practice that the best arrangement comprises the provision of a plurality of consonant keys for each hand, and a separate set of vowel keys positioned so as to be operated by the thumbs. The use of composite characters which are called "dual letters," has also been found to be useful in these machines.

This application is a division of my previous application filed October 18, 1947, Serial No. 780,607.

The principal object of the present invention is to provide, in a machine of the character aforesaid, improved mechanism whereby three type bars may be selectively operated by two keys as, for example, on each side of the machine, the use of but two vowel keys to imprint three separate vowels as desired.

A further object of the present invention is to provide, in a machine of the character aforesaid, improved mechanism whereby the aforesaid vowel keys may be positioned so as to be actuated by the thumbs of the operator.

The nature and characteristic features of the present invention will be more readily understood from the following description, taken in connection with the accompanying drawings forming part hereof, in which:

Figure 1 is a diagrammatic view illustrating a preferred form of arrangement of the keyboard of a machine of the present invention;

Fig. 2 is a top or plan view of a stenographic typewriter embodying the main features of the present invention, certain of the parts being omitted for the purpose of clarity;

Fig. 3 is a side elevation thereof, a portion of the frame being broken away;

Fig. 4 is a section taken approximately on the line 4—4 of Fig. 2 illustrating the arrangement of one of the consonant type bars and the mechanism for actuating the same by its control key;

Fig. 5 is a section taken approximately on the line 5—5 of Fig. 2 illustrating the means for shifting the consonant type bars whereby a single type bar may be selectively used for imprinting either one of the two different characters through the operation of the same control key;

Fig. 6 is a view similar to Fig. 5 but with parts in positions assumed when a set of consonant type bars is raised or shifted by the operation of the shift control key to bring the lower set of type faces into operative position with respect to the platen for operation by the desired type control key;

Fig. 7 is a section taken approximately on the line 7—7 of Fig. 2 illustrating the arrangement of the vowel type bars and the operating keys therefor whereby the vowel type bars may be selectively operated;

Fig. 8 is an enlarged elevational view of certain of the parts for the selective actuation of the vowel type bars, the key levers being shown in section, and the point of view being indicated by the line 8—8 of Fig. 7;

Fig. 9 is a perspective view of certain of the parts in separated relationship, further illustrating the arrangement of the vowel key levers and certain of the associated parts; and

Fig. 10 is a fragmentary elevational view of certain of the parts for regulating the tension of the key lever springs.

It should, of course, be understood that the description and drawings herein are illustrative merely, and that various modifications and changes may be made in the structure disclosed without departing from the spirit of the invention.

Means for rotating the platen, over which the paper is fed, with a step by step motion between the type impressions, and a ribbon mechanism for applying the ink for the type impressions, are shown respectively in my pending applications for Letters Patent, Serial No. 752,215, filed June 3, 1947, now Patent No. 2,500,587, dated March 14, 1950, and Serial No. 747,608, filed May 13, 1947, now Patent No. 2,508,780, dated May 23, 1950. However, it should be understood that the present invention is not limited for use with the several mechanisms specifically shown and described in my aforesaid pending applications.

Referring to the drawings, in the particular embodiment of the present invention therein

shown, the consonant control keys are arranged preferably as shown in Fig. 1, there being eight keys provided for control by the fingers of the right hand, and eight keys for control by the fingers of the left hand. One key of each of the above sets is a shift key, but the other keys of each set are preferably used for imprinting consonants or dual letter characters, as indicated in Fig. 1.

More particularly, the present invention contemplates the provision of two pairs of vowel keys, one pair being controllable by the thumb of the right hand, and the other pair being controllable by the thumb of the left hand, as will be hereinafter more fully set forth.

The vowel keys are connected to the vowel type bars so that each pair of the vowel keys controls three separate type bars, the arrangement being such that either key of either pair may be actuated separately to imprint their respective type faces, or both keys of a pair may be actuated together to cause another and different type face to be imprinted.

As shown in the drawings the frame work of the machine may include side plates 20 which may be connected to each other in any preferred manner. The consonant printing type bars 29 are preferably disposed vertically and each set of consonant printing type bars 29 on each side of the machine is pivotally mounted on a transversely extending shaft 22. Each shaft 22 is carried by a frame work 23 which, in effect, comprises a link at one end of which the shaft 22 is supported and the other end of which is pivotally mounted on a transversely extending shaft 24.

The keys 44 for controlling the consonant printing type bars are mounted on the forward ends of arms 25, of a series of modified bell crank levers 26 which are pivoted on a transversely extending shaft 27. Each of the bell crank levers 26 is connected by a link 28 to one of the consonant printing type bars 29, said link 28 being pivotally connected at one end to the type bar 29 intermediate the ends thereof, and at its other end to the bell crank lever 26 below the shaft upon which said bell crank lever is pivotally mounted.

The bell crank lever 26 also has a downwardly extending arm portion 30, provided at its lower end with a hook 31 which is engaged by one end of a coil spring 32. The other end of coil spring 32 is connected to the hook portion 33 of a disc-like member 34, which is rotatively mounted on a transversely extending shaft 35. Each of the disc-like members 34 is provided at one portion of its periphery with a plurality of notches 36 which are engaged by one of the spring dents 37 of a comb-like member 38, which extends across the machine below the disc-like members 34, there being provided a separate spring dent 37 for each of the discs 34 whereby the same may be individually rotated to desired positions, thereby to adjust separately the tension of each coil spring 32 which serves to return its key lever to the initial position. A limiting member 39 preferably comprising a bar of compressed felt extends across the machine between the frame members, being so positioned that the under face thereof will be contacted by the upper faces of the arms 25 of the bell crank levers 26, upon the ends of which the control keys 44 are mounted.

Each of the consonant printing type bars 29 is provided with two type faces preferably according to the layout as shown in Fig. 1 of the drawings. Normally, the type bars 29 are in their

lowermost positions as shown in Figs 3, 4 and 5 of the drawings, so that if either one of the consonant printing keys of either set is depressed the type face 41 at the upper end of type bar 29 will normally be imprinted upon the paper (not shown) which passes over the platen 42. When however, it is desired to utilize the type faces 43 which are located at lower locations on the front of the type bars, the shift key 45 for controlling that set of consonants will be depressed, and thereby bring into action the mechanism shown more particularly in Figs. 5 and 6 of the drawings, to raise the entire set of consonant printing type bars and to then imprint the desired type face or faces according to the consonant type bars of the set which are depressed, either simultaneously with the shift key 45 controlling that set of type bars, or after said shift key is depressed.

The shift key 45 is mounted on the forwardly projecting arm 46 of a bell crank lever 47 which is also pivoted on the transverse shaft 27 upon which the other bell crank levers 26, for controlling the consonant printing type bars 29, are mounted. The lever 47 is also provided with a downwardly extending arm 48 having a hook portion 49 which is connected by means of a coil spring 32 to a hook portion 33 of an adjusting disc 34 mounted on the transverse shaft 35, also having peripheral notches 36 engaged by a spring dent 37 of the transversely extending comb member 38, hereinbefore referred to, for controlling the adjusting discs 34 for the other levers.

The lower end of the lever arm 48 is pivotally connected as at 51, to one end of a link 52, the other end of which is pivotally connected, as at 53, to a rocker member 54, which is pivotally mounted on a transverse shaft 55 which extends across the machine between the side plates 20 thereof.

The rocker member 54 is also provided with a pin 56 which engages a suitably shaped notch 57 in a cam member 58. The cam member 58 is pivotally mounted on a transverse shaft 59 which extends across the machine between the side plates 20 of the frame thereof. The cam member 58 is provided with a cam surface 60 which is engaged by a pin 61 extending from an extension 62 of the link frame 23 which supports the transverse shaft 22 upon which the lower ends of the type bars 29 are pivotally mounted.

The cam surface 60 is so shaped (see Figs. 5 and 6) that during the first portion of the motion of the cam member 58 the link frame 23 will be raised a sufficient distance to bring the lower set of type faces 43 into printing position, that is, in the horizontal plane passing through the axis of the platen, so that when one or more of the type bars 29 is actuated by its or their control keys, said type face or faces will be imprinted upon the paper passing over the platen.

The cam surface 60 is also shaped so that after the type faces 43 have been brought to their proper location for the printing operation, the pin will ride idly over the balance of the cam surface 60 notwithstanding the further depression of the shift control key to an amount corresponding to the normal depression of the type bar control keys.

The shaft 22 upon which the lower ends of the type bars 29 are pivotally mounted extends outwardly beyond the side of the machine frame plates 20 on that side and it has connected thereto the lower end of coil spring 63, the upper end of which is secured to an adjustable arm 64 which

is secured to the side plate 20 of the machine frame. The spring 63 serves as a counter-balance for the weight of the parts whereby the operation of the shift key is made easier.

The two pairs of levers for the operation of the six vowel type bars, and the associated mechanism, comprising the present invention, are preferably disposed between the two sets of consonant control keys and their associated mechanism. The same are shown more particularly in Figs. 7 to 9 of the drawings, the keys being disposed forwardly of the keys for controlling the consonant printing bars.

There are three vowel printing type bars 70 in each set, each being pivotally mounted at its lower end on a transverse shaft 71, which shaft is supported by a suitable frame work 72 having ears or lugs for mounting the same on the transversely extending shafts 24 and 55, hereinbefore referred to.

The control levers for the operation of the vowel printing type bars are also pivotally mounted on the transverse shaft 27 upon which the bell crank levers for controlling the consonant printing type bars are mounted.

In each pair of the vowel controlling keys there is provided one bell crank lever 73, having a horizontally extending arm upon the front end of which its control key is mounted. The lever 73 has a downwardly extending arm 75 having a pivot pin 76 by means of which a link 77 is connected thereto. The link 77 is connected at its other end to the pivot 78 on the type bar 70 which it controls.

The lever 80 for the other control key 81 of the pair has an arm portion 82 extending downwardly a further distance than the arm 75 of lever 73. The lower end of the downwardly extending arm 82 of lever 80 is provided with a pivot 83 by means of which a lever 90 is connected thereto. This lever 90 is preferably disposed between the arm 75 of lever 73, and the arm 82 of lever 80. The intermediate lever 90 is also provided with a pivot 91 at a distance further downward from the shaft 27 than the pivots 76 on the arms 75 and 82 of the key operated control levers. The intermediate lever 90 is connected to a link 93, one end of which is mounted on the pivot 91, and the other end of which is mounted on its pivot carried by the intermediate type bar 70 of the set of three.

Each of the levers 73 and 80 is pivoted on the transverse shaft 27, and the type bars respectively connected to said levers are directly controlled by the key which is mounted at the front end of its lever. The intermediate lever 90, however, has an aperture 94 at its upper end whereby said upper end of said lever is ordinarily free to move to a limited extent with respect to said shaft 27.

A pivot pin 95 also connects lever arm 75 and the intermediate lever 90. The lever 90 is provided with a hook portion 96 at its lower end to which one end of a coil spring 32 is connected. The other end of the coil spring 32 is connected to the hook portion 33 of an adjusting disc 34 mounted on the transverse shaft 35.

Likewise, the downwardly extending arm 75 of lever 73 is provided with a hook portion 79 for the attachment thereto of a coil spring 32 for returning the control key 74 to the initial position.

The operation of the above described typewriter with particular reference to the portion thereof comprising the present invention may now be explained. When it is desired to imprint any one of the consonant or dual letter characters at the upper end of a particular type bar,

it is necessary merely to depress the proper control key 44 whereby the downwardly extending arm 30 of the bell crank lever 26 upon which said control key is mounted will be swung forwardly, and through the action of the link 28, the character at the upper end of the type bar 29 will be pushed forwardly against the ribbon and paper (not shown) which are interposed between the type and face of platen 42. This will be readily apparent from a consideration of the mechanism shown in Fig. 4 of the drawings.

When, however, it is necessary to imprint one or more or the lower characters 43 of a set on either side of the machine, it is necessary to depress the shift key 45 on that side, and as the control key 44 for causing the type bar to be moved forwardly to printing position is simultaneously operated, it is essential that the entire set of consonant type bars 29 be raised before the desired type bar 29 is moved forwardly to effect the printing. For this purpose the mechanism shown more particularly in Figs. 5 and 6 of the drawings, is employed.

It will be noted that as the shift key 45 is depressed the lower end of the downwardly extending arm 48 of the lever 47 controlled thereby will be moved rearwardly against the tension of its spring 32. This motion will be communicated by the link 52 to the rocker member 54. When the rocker member 54 is thus actuated the pin 56 carried thereby will cause the cam member 58 to be rotated on the axis provided by the transverse shaft 59, and by reason of the peculiar shape of the cam surface 60, which engages the pin 61 carried by the link frame 23, the primary action will be to raise the entire bank of consonant type printing bars 29 to bring the lowermost set of type faces thereon to the printing position in the horizontal plane passing through the axis of the platen. After the type bars 29 have thus been brought to the position whereby the lower set of type faces 43 may be used to effect the printing, any further movement of the shift key will act merely to cause the cam surface 58 to move idly with respect to the pin 61 carried by the link member 23, and when the cam 58 is so positioned with the dwell portion of the cam surface 60 bearing against said pin 61 the printing action will be effected through the depression of the desired key. The operation otherwise is substantially the same as when the upper set of type faces are in position to be printed.

The operation of the vowel key mechanism of the present invention will be more readily understood by a consideration of Figs. 7, 8 and 9 of the drawings. When either one of the control keys 74 or 81 is depressed, the motion of the same will be transferred by levers 73 or 80, as the case may be, to its link 77, and thence directly to the type bar 70 to which said link 77 is connected. When the lever 73 is depressed, its arm 75 will move forward to actuate its type bar 70, and when this occurs, the intermediate lever 90 will be swung about the pivot 83 at the bottom thereof, this action being permitted by reason of the provision of the enlarged aperture 94 at the top through which the shaft 27 extends. However, the type bar 70 which is directly controlled by the arm 75 of the lever 73 will be moved forwardly to a greater extent than the type bar controlled by the lever 90, hence only the type bar 70 which is directly controlled by the lever 73 will be imprinted.

On the other hand, whenever the lever 80

is depressed by the actuation of the key 81, the lever 90 will now be swung about the pivot 95 when the lower end of the arm 82 of lever 80 is moved forwardly and, here again, the type bar 70 directly controlled by the lever 80 will be the only one to be imprinted by reason of it being advanced beyond the type bar 70 controlled by the intermediate lever 90.

When, however, both control keys 74 and 81 are simultaneously depressed, the intermediate lever 90 will now be swung forward about the axis of the shaft 27, as the same will be moved in unison with the arms 75 and 82 of the levers 73 and 80, respectively, this by reason of being engaged at two different points by the pivot pins 83 and 95 carried by the lever arms 82 and 75 respectively.

However, as the location of the pivot 91 by means of which the link 93 is connected to lever 90 is at a greater distance from the axis of the shaft 27, the type bar 70 to which the other end of link 93 is connected will be moved forwardly a greater distance to make its impression on the paper passing over the platen without the other type faces reaching the same.

It should be noted that the springs 32 which are used to return the various levers to their initial position are all separately adjustable so that the proper degree of tension may be obtained on each of said springs, this being accomplished by the rotation of the desired notched disc 34, and when the hook portion 33 thereof is brought to the proper position, it will be held in such position by the spring dent 37 of the comb member 38.

Should the tension of a particular spring 32 be greater than is desired for the lever to which it is connected, said tension may be reduced by pushing the spring dent 37 a sufficient distance to free the same from the notches of its disc 34, which will permit the disc 34 to be rotated in an opposite direction to reduce the tension on said spring 32.

I claim:

1. In a stenographic typewriter, a set of three type bars each having individual printing characters at one end thereof, separate links for operating said type bars to effect the printing, two manually operable control levers to which two of said links are respectively connected, and a third lever to which the other link is connected, said third lever being connected to said control levers at different points whereby said third lever is operated to effect printing action by its type bar only when both control levers are actuated in unison.

2. In a stenographic typewriter, a set of three type bars each having individual printing characters at one end thereof, separate links for operating said type bars to effect the printing, two manually operable control levers to which two of said links are respectively connected, and a third lever to which the other link is connected, said third lever being connected to said control levers at different points whereby said third lever is operated to effect printing action by its type bar only when both control levers are actuated in unison, and the pivotal connection of the link extending from its type bar to said third lever being at a greater distance from the axis of the manually operable levers than the pivotal connections of the other two links from said axis.

3. In a stenographic typewriter, a set of three type bars each having individual printing characters at one end thereof, separate links for operating said type bars to effect the printing, two manually operable levers to which two of said links are respectively connected, and a third lever to which the other link is connected, said third lever being pivoted at one point to one of said manually operable levers, and at another point to the other of said manually operable levers.

4. In a stenographic typewriter, a set of three type bars each having individual printing characters at one end thereof, separate links for operating said type bars to effect the printing, two manually operable levers to which two of said links are respectively connected, and a third lever to which the other link is connected, said third lever being pivoted at one point to one of said manually operable levers, and at another point to the other of said manually operable levers, and the pivotal connection of the link extending from its type bar to said third lever being at a greater distance from the axis of the manually operable levers than the pivotal connections of the other two links from said axis.

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