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KEYBOARD FOR TYPEWRITING MACHINES

Fig. 3.

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Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

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[Signature]

Attorney
My invention relates to improvements in keyboards for typewriting machines, and the object of the improvements is to provide a keyboard in which the keys are arranged relatively to one another so as to facilitate blind writing and writing with all the fingers of each hand. Another object of the improvements is to provide a key board in which the keys may be readily removed from the key levers. With the objects in view my invention consists in the matters to be described hereinafter and particularly pointed out in the appended claims.

For the purpose of explaining the invention an example embodying the same has been shown in the accompanying drawings in which the same reference characters have been used in all the views to indicate corresponding parts. In said drawings,

Fig. 1, is an elevation of the keyboard,

Fig. 2, is a section taken on the line 2-2 of Fig. 1,

Fig. 3, is a horizontal section taken on the line 3-3 of Fig. 2 and showing the key board and a part of the mechanism of the machine,

Fig. 4, is a detail view showing one of the space keys and the mechanism connected therewith,

Fig. 5, is a detail view showing a part of a key lever and the means for securing a key thereto,

Fig. 6, is a top plan view of Fig. 5, and

Fig. 7, is an end view looking from the left in Fig. 5.

In describing the invention it will be assumed that the keyboard is a part of the typewriting machine shown and described in my copending application for patent Ser.

No. 684,399, filed January 25, 1924, now Patent 1,553,765, dated September 15th, 1925, of which the present application is a division, and I shall make particular reference only to the keyboard proper, the mechanism operated by the key levers being described in a general way. But I wish it to be understood that my invention is not limited to the use of the keyboard in the said machine.

As shown in the drawings the key board comprises type keys 1 to 5, 11 to 15, and 21 to 25, spacing keys 7, shift keys 8 and 9, and tabulation keys 10. The keys 1-5, 11-15, 21-25, 7, 8 and 9 are removably secured to the key levers 16, 17, 18 and 19. As appears from Figs. 5 to 7 the keys are provided at their bottoms with slots by means of which they are fitted on the flat ends of the key levers. The front ends of the levers are formed with laterally projecting tongues 20 provided by indentations of the levers. At the rear of the keys the levers carry tongues 27 providing stops for the keys when pushing the same on the levers.

The type keys 1-5, 11-15, 21-25 are arranged, as best seen in the plan view, Fig. 3, in two groups, symmetrically on opposite sides of the machine, and between the two groups of type keys, the shift keys 8 and 9, the tabulation keys 10, and the supplementary keys 28 are arranged.

For facilitating blind writing and writing with all the fingers of each hand, the type keys are disposed in several transverse rows one behind the other, and the keys of each row are not disposed along straight lines but they are displaced with relation to each other according to the relative lengths of the fingers, so that in the normal or natural positions of the hands each finger directly bears on its key. The keys of the front or lowermost set are the following: The keys 1 designed for actuation by the thumbs of the right and left hands, the keys 2 for the forefingers, the keys 3 for the middle fingers, the keys 4 for the ring fingers, and the keys 5 for the little fingers. The keys of the next sets are likewise disposed along curved lines, and the corresponding keys have received the characters 11, 12, 13, 14, 15 and 21, 22, 23, 24, 25 but the set of keys 11 to 15 are elevated relatively to the keys 1 to 5, and the keys 21 to 25 are elevated relatively to the keys 11 to 15. The space keys 7 are disposed lower than the first set of keys 1 to 5. Therefore, when the fingers rest for example on the lower set of keys the thumbs feel the front faces of the keys 11 and the forefingers feel the sides of the said keys, which indicates that the fingers are in the correct positions. In the same way the ring fingers feel the side faces of the keys 15 of the next set. The space keys 7 and the shift keys 8 and 9 are so disposed as to permit opera-
tion without displacing the hands from the normal positions, by slightly moving the thumbs to the right or left.

The keys which make up the double succession of three rows, 1–5, 11–15, 21–25, number in all thirty, adequate to include the entire alphabet. In addition to enabling the user to place his hand accurately on the keyboard by touch alone, the arrangement is such that each of three corresponding particular keys within the three rows, that is to say, keys 1, 11, 21, keys 2, 12, 22, etc., are within normal reach of a finger of the user by movement of the finger muscles only, the hand remaining at rest, or substantially at rest. This arrangement in grouping places the whole alphabet under easy and certain reach of the ten finger tips of the user.

In the example shown in the figures the typewriter machine comprises a type cylinder 30 mounted on a plate 31 rockingly mounted at 32 for throwing the type cylinder against the platen 33. The spindle 34 of the type cylinder is adapted to be shifted in axial direction for bringing any of the circumferential rows of types into position for printing and it is adapted to be turned about its axis for setting either one of the types of each row in printing position. Throwing movement is imparted to the type cylinder by means of an electromagnet 35 secured to the bottom face of the plate 37 and its armature 38 connected with the plate 31 by a link 39. Rotary movement is imparted to the type cylinder by means of an electromagnet 36 and its armature 40 through the intermediary of mechanism described in detail in my said original application. Axial or shifting movement is imparted to the type cylinder by means of a rocker 41 through the intermediary of a rod 42 acting on the bottom end of the spindle 34. The tabulation mechanism comprises vertically shiftable bars 53 adapted to be elevated into position for engagement with dogs 54 placed on a rail 55 of the paper carriage 56.

The type key levers 16 and 17 are mounted in bearing members 44 secured to the bottom plate 37. The said key levers are adapted to close the electric circuit of the electromagnet 36, and they carry rockers 45 adapted to rock frames 46 or 47 controlling the circuit-make-and-break device 48 of the said circuit. The shift keys 8 and 9 are provided on shift key levers 19 mounted in bearing members 50 rising from the bottom plate 37, and the said levers are connected with the rocker 41 by links 51 in pin and slot engagement with the said rocker. The tabulation keys 10 are secured to key levers 52 mounted in eyes 58 secured to a plate 59, and the said levers engage the bars 53 at the bottom ends thereof. The space key levers 18 act through rockers 60 and a link 61 on a frame 62 carrying the armature 40, which frame is adapted to operate the letter spacing mechanism 63 through the intermediary of a frame 65 and a link 64.

For further description and illustration of the mechanism of the typewriting machine referred to is made to the said original application, and I deem it not necessary to repeat the detailed description since my present application relates only to the keyboard and the construction of the keys, which parts may be provided in a typewriting machine of any known or new type.

I claim:

1. In a keyboard for a typewriting machine a grouping of fifteen keys in three groups of five keys each, the keys within each group being situated in a common plane and displaced from straight-line succession according to the natural positions of the finger tips of a user, the three groups being arranged at successively higher levels from front to rear, the sides of outer keys of the second and the third rows extending adjacent inner keys of the first and second rows, and each three corresponding particular keys within the three rows lying within normal reach of a finger of the operator while the hand remains substantially at rest.

2. A keyboard for typewriting machines, comprising two groups of keys symmetrically arranged on opposite sides of the machine, each group comprising a plurality of transverse rows of keys arranged row behind row and at rearwardly increasing heights, the keys within each row lying in a single horizontal plane but displaced from straight-line succession with relation to each other, according to the relative position of the finger tips, and the outer keys of one row being disposed laterally of keys of the next row, and tabulation keys arranged to the rear of and between the two said groups of type keys.

3. A key structure for typewriting machines, comprising a flat key lever extending in vertical plane and provided with a laterally projecting spring tongue, and a slotted key placed with its slot extending vertically and straddling the vertically-extending body of the key lever and engaged by said tongue.

In testimony whereof I hereunto affix my signature.

OSKAR FISCHER.