

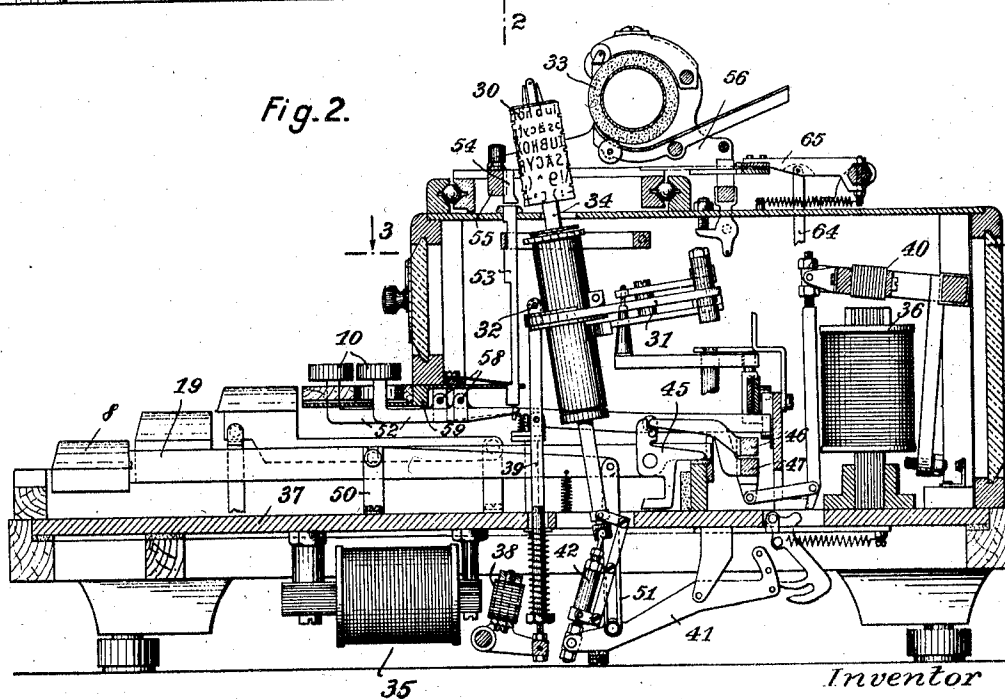
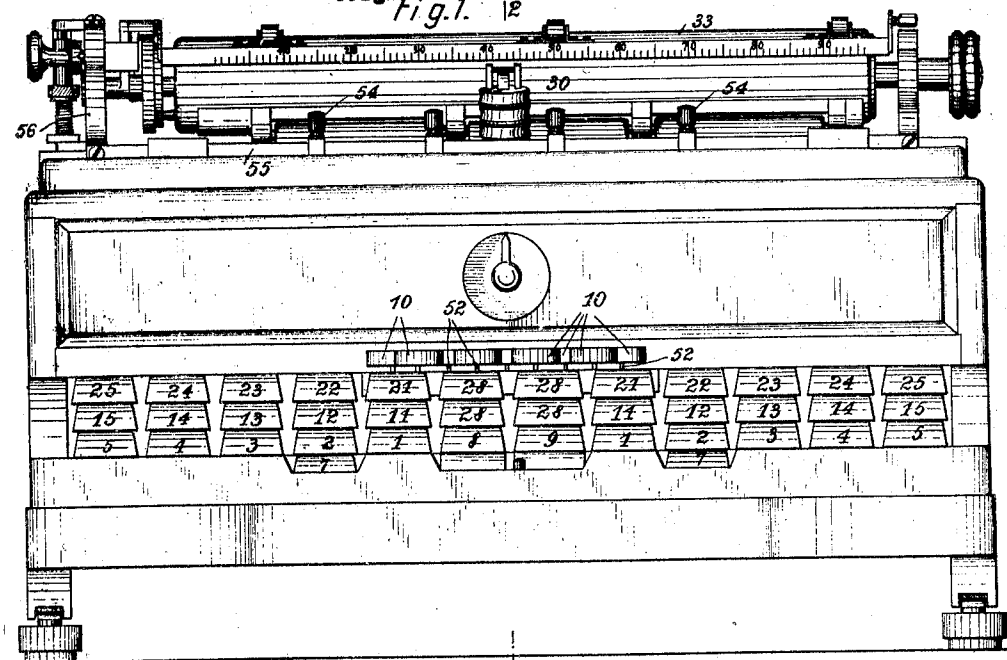
July 24, 1928.

1,678,334

O. FISCHER

KEYBOARD FOR TYPEWRITING MACHINES

Original Filed Jan. 25, 1924 3 Sheets-Sheet 1



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July 24, 1928.

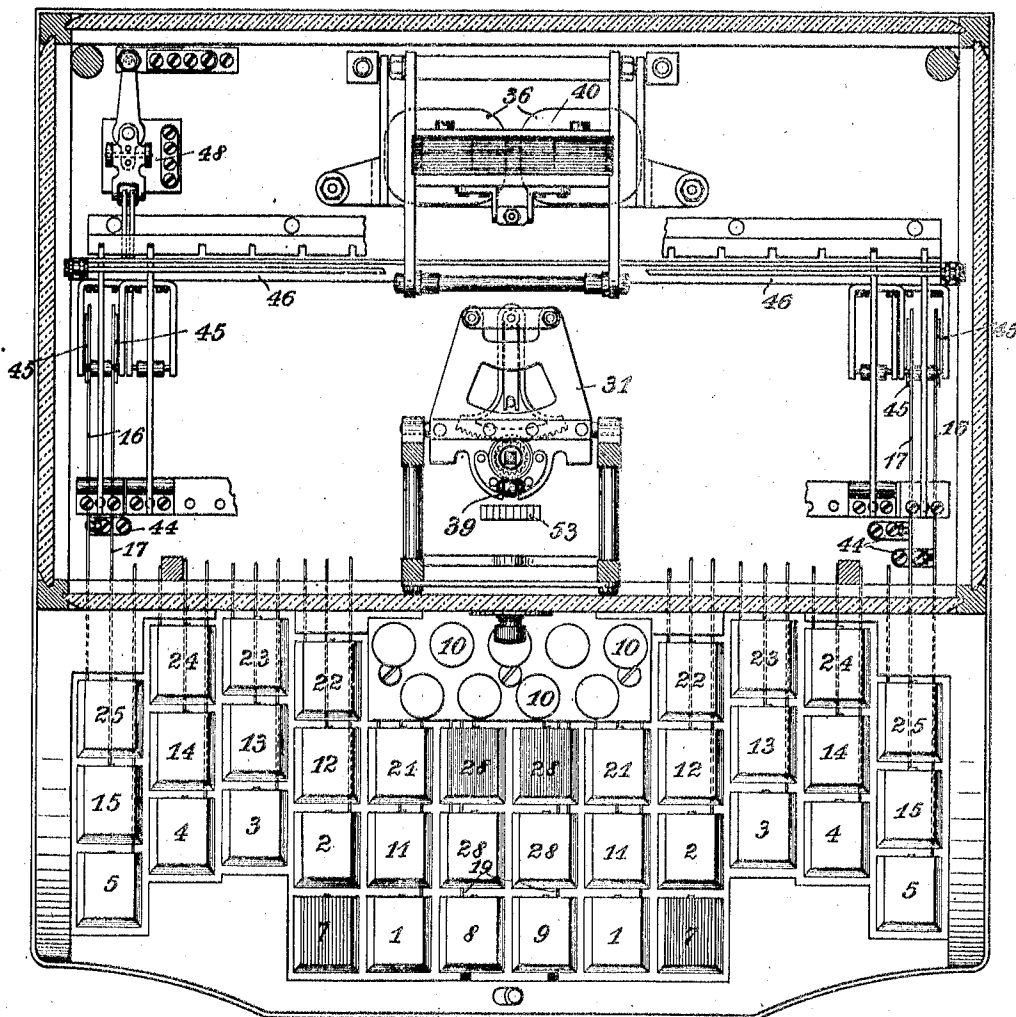
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Fig. 3.



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Fig. 4.

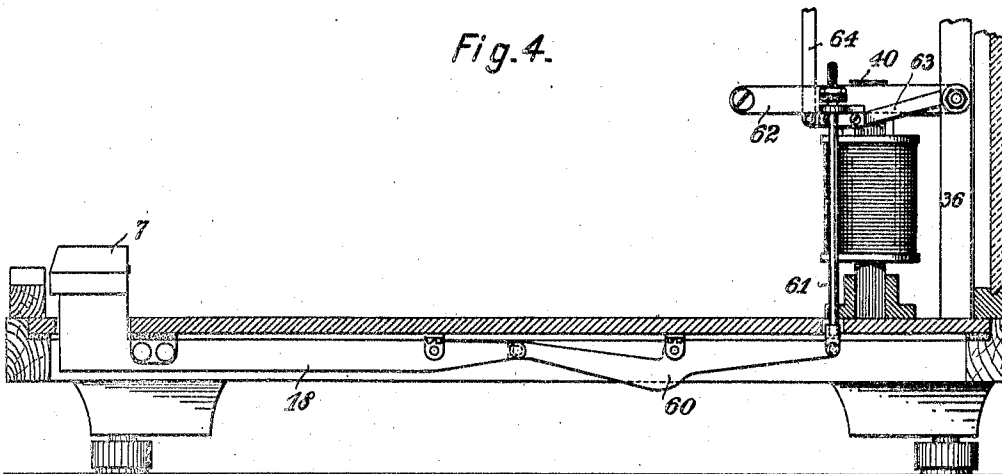


Fig. 5.

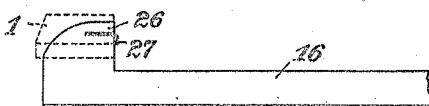


Fig. 7.

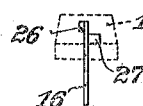
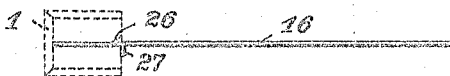


Fig. 6.



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UNITED STATES PATENT OFFICE.

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KEYBOARD FOR TYPEWRITING MACHINES.

Original application filed January 25, 1924, Serial No. 688,399, and in Germany November 4, 1918.
Divided and this application filed April 10, 1925. Serial No. 22,060.

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 5 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 10 from the key levers. With these 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. 688,399, 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 26 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 suc-
 5 cession 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 key-
 board by touch alone, the arrangement is
 10 such that each of three corresponding par-
 ticular 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
 15 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.

By thus disposing the type keys a free
 20 field is left at the median rear part of the
 key board, which field is made use of for
 disposing the tabulation keys 10.

Further, between the second and third sets
 of type keys a space is left for four other
 25 keys 28.

The mechanisms controlled by the keys
 have been shown and described in my afore-
 said original application, and I deem it nec-
 30 essary only to refer to the said mechanisms
 in a general way.

In the example shown in the figures the
 typewriting machine comprises a type cyl-
 35 nder 30 mounted on a plate 31 rockingly
 mounted at 32 for throwing the type cylin-
 der 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
 40 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
 45 and its armature 38 connected with the plate
 31 by a link 39. Rotary movement is im-
 parted to the type cylinder by means of an
 electromagnet 36 and its armature 40 through
 the intermediary of mechanism described in
 50 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 act-
 ing on the bottom end of the spindle 34. The
 55 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
 60 in bearing members 44 secured to the bot-
 tom plate 37. The said key levers are adapt-
 ed to close the electric circuit of the electro-
 magnet 36, and they carry rockers 45 adapted
 to rock frames 46 or 47 controlling the cir-
 65 cuit-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 en- 70
 gagement with the said rocker. The tabu-
 lation 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 75
 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 65 through the intermediary of
 a frame 63 and a link 64. 80

For further description and illustration of
 the mechanism of the typewriting machine
 reference is made to the said original appli-
 cation, and I deem it not necessary to repeat
 the detailed description since my present 85
 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 ma-
 chine 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 95
 according to the natural positions of the fin-
 ger tips of a user, the three groups being ar-
 ranged at successively higher levels from
 front to rear, the sides of outer keys of the
 second and the third rows extending adja- 100
 cent 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. 105

2. A keyboard for typewriting machines,
 comprising two groups of keys symmetri-
 cally arranged on opposite sides of the ma-
 chine, each group comprising a plurality of
 transverse rows of keys arranged row behind 110
 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 fin- 115
 ger 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. 120

3. A key structure for typewriting ma-
 chines, comprising a flat key lever extending
 in vertical plane and provided with a lat-
 125 erally 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.