

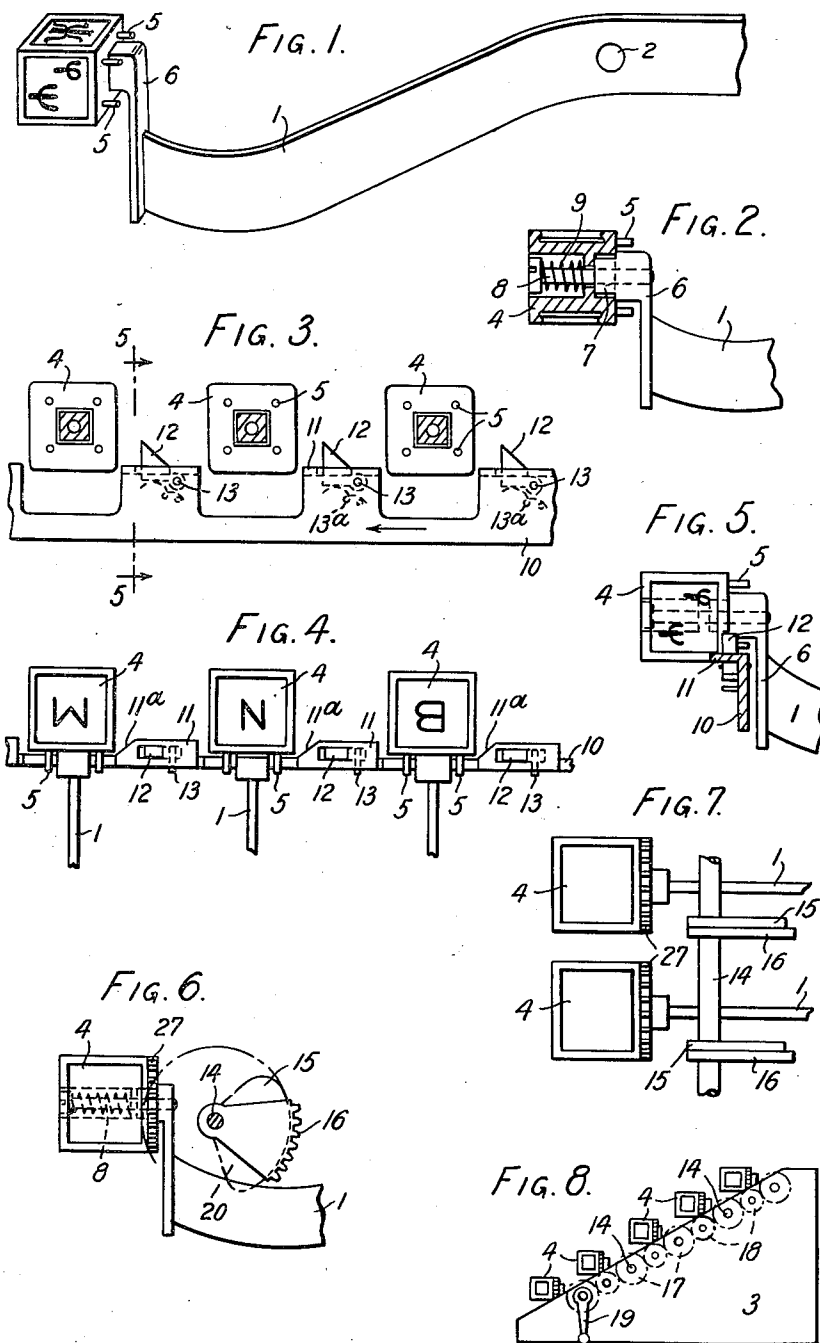
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KEYBOARD OF KEY OPERATED TYPOGRAPHICAL MACHINES

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KEYBOARD OF KEY-OPERATED TYPOGRAPHICAL MACHINES

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In the use of key-operated typographical machines, such as matrix-composing machines, typewriters and the like, it frequently happens that the same keyboard has to be used for different character arrangements. For example, there are matrix-composing machines which are capable of using alternatively a plurality of fonts of matrices which are differently arranged in their respective magazines and call for respectively different lay-outs for the keys on the keyboard, or wherein such languages as German, Greek, Russian or Hebrew may be composed alternatively and wherein a change-over from one language to another necessitates a change of the keyboard lay-out.

When different alphabets are employed in the same machine, it has been proposed to employ keybuttons each bearing a plurality of characters, and it has further been proposed to fit the keys with adjustable plates or cover plates bearing different characters which can be adjusted individually or row by row.

According to this invention a keyboard is provided with improved means for adjusting the keybuttons according to the alphabet actually in use, the said means being operative to effect the adjustment one row at a time.

The invention further contemplates the adjustment of the keybuttons of the whole keyboard in common by a single operation. In the case of machines wherein the actuation of various parts is necessary to change over from one type-face to another, for example in matrix-composing machines, where a change of matrix-magazines is necessary. The invention further includes means whereby the changing over of the keyboard can be effected simultaneously with the shifting of the magazines and with the same operating means.

The accompanying drawing illustrates by way of example, two constructional forms of the invention.

In the said drawing:—

Figure 1 is a perspective view of a portion of a key lever with its keybutton;

Figure 2 is a side elevation of a key lever, partly broken away, showing the keybutton in central vertical section;

Figure 3 is a rear view of a number of keybuttons arranged side by side, and the adjusting mechanism associated therewith;

Figure 4 is a plan of the parts shown in Figure 3;

Figure 5 is a section as viewed in the direction of the arrows on the line 5—5 of Figure 3;

Figure 6 is a side elevation showing a further constructional form of the adjusting mechanism;

Figure 7 is a plan of the parts illustrated in Figure 6; and

Figure 8 is a diagrammatic side elevation of the whole keyboard showing an arrangement for simultaneously adjusting all the keybuttons.

In the drawing the invention is represented as applied to a keyboard comprising, as usual, key levers 1, pivotally supported by bolts 2 on pivot rods in the keyboard frame 3. Each keybutton 4 is made in the form of a prism presenting as many operative faces as there are characters to be dealt with. The arrangement illustrated provides for the alternative use of four different character-bearing faces, and although the following description deals solely with that arrangement, the modifications of the details applicable to a large or smaller number of character-bearing faces will be readily understood.

Each keybutton 4 is mounted on an upstanding member 6 of the key lever 1, which is provided with a forwardly extending square head 7 (Figure 2), adapted to engage a correspondingly shaped recess in the keybutton, thus preventing accidental displacement of the keybutton from the operative position to which it is adjusted. Moreover, the keybutton is formed with a central opening by which it is guided on a stud 8 projecting forwardly from the head 7, and a spring 9 tends to hold the keybutton in the operative position, as shown in Figure 2. Pins 5, corresponding in number with the operative faces of the keybutton, extend rearwardly therefrom.

In the first constructional form of the mechanism for adjusting the keybuttons, shown in Figures 3 to 5, a bar 10 is provided for each row of keys, extending across the whole length of the keyboard which is recessed beneath each of the keybuttons so as not to interfere with the normal depression thereof. Moreover, adjacent each key of the row, the bar 10 is formed with a forwardly projecting ledge 11 having an inclined edge 11^a. Through an aperture in each of the ledges 11 projects a pawl 12, which is pivoted on a stud 13 on the bar 10 and held in its active position by a spring 13^a, as shown in Figure 3.

When the bar is moved in the direction shown by the arrow in Figure 3, the inclined edge 11^a of each ledge 11 is brought into engagement with the respective keybutton and the latter thereby

moved forwardly along its stud 8 to disengage it from the square head 7 by which it is normally locked against rotation. After the keybutton has thus been unlocked, the respective pawl 12 comes into contact with one of the pins 5 which then stands in the path of the pawl, and continued movement of the bar rotates the keybutton through an angle of 90 degrees. When this rotary movement has been completed, the bar 10 will be returned to its normal position and the spring 9 will act to re-engage the keybutton with the head 7 by which it is locked in the operative position. Thus the single actuation of the bar 10 will effect a change of the operative face of all keybuttons in one keyboard row.

As above mentioned, there is one bar 10 appropriate to each row of keybuttons. If desired, all the bars 10 may be connected together and moved in unison.

According to the second constructional form of the invention illustrated in Figures 6 and 7, a toothed wheel 27 is employed instead of the pins 5 on the keybuttons 4, and above every row of key levers at the rear of the keybuttons there is mounted on the keyboard a shaft 14, provided with a cam 15 and a toothed segment 16 appropriate to each keybutton. A complete rotation of the shaft 14 will first bring the cams 15 into engagement with the keybuttons and move the latter forward along the studs 8, until the buttons are free to turn. The segments 16 and wheels 27 then mutually engage and turn the keybuttons. The toothed portion of the segments 16 is of the proper length to ensure that the keybuttons will be turned exactly 90 degrees. When the toothed segments 16 and cams 15 have travelled past the keybuttons, the latter, through the action of the spring 9, will again return to the normal locked position. As shown in Figure 8, all the shafts 14 may be provided, at the side of the keyboard, with pinions 17 all geared together through intermediate gears 18, and one of the shafts 14 provided with a hand crank 19 operated by hand, whereby all the shafts 14 may be simultaneously rotated in the same direction and an operative change of all the keybuttons simultaneously effected.

For operating the devices above described, it is merely necessary to actuate the bars 10 or, as the case may be, the shafts 14 of the rows of keybuttons which have to be changed, or all the bars or shafts when the buttons of the whole keyboard are to be changed. The pawls 12 are spring controlled so that when the movement of the bars 10 is reversed the said pawls yield and pass by the shifting pins 5, which have in the meantime reached the operative position. Naturally, the path travelled by the bars 10, or the length of the segment 16, must be adapted to the angle about which the keybuttons are to be turned, and this angle will depend upon the number of faces with which the keybutton prism is provided.

In the application of the invention to typographical composing machines in which a change of type face calls for the shifting of the matrix-magazines, the means by which the magazines are shifted may be operatively connected to the keybutton adjusting mechanism so that adjustment of the keybuttons is automatically effected simultaneously with the changing of the magazines. A second cam 20, shown by dotted line in Fig. 6, appropriate to each keybutton may be provided on the shafts 14, which will come into action to unlock the keybuttons when the shafts

14 are rotated in a clockwise direction in Figure 6.

It is to be understood that the constructional forms of the invention hereinbefore described are chosen merely as convenient examples, and that modifications or variations thereof may be adopted without departing from the invention.

Having described my invention, I declare that what I claim and desire to secure by Letters Patent is:—

1. In a keyboard for a key-operated typographical machine, the combination of a row of multiple-faced keybuttons, a pivotal axis appropriate to each keybutton about which it can be rotated to bring a desired face into operative position, a locking device for each keybutton rendered active and inactive by axial displacement of the keybutton and means common to all the keybuttons of the row adapted to effect said axial displacement.

2. In a keyboard for a key-operated typographical machine, the combination of a row of multiple-faced keybuttons, a pivotal axis appropriate to each keybutton about which it can be rotated to bring a desired face into operative position, a locking device for each keybutton rendered active and inactive by axial displacement of the keybutton, and means common to all the keybuttons of the row operable to effect said axial displacement and rotation of the keybuttons about their axes.

3. In a keyboard for a key-operated typographical machine, the combination of a plurality of rows of multiple-faced keybuttons, a pivotal axis appropriate to each keybutton about which it can be rotated to bring a desired face into operative position, a locking device for each keybutton rendered active and inactive by axial displacement of the keybutton, a device common to all the keybuttons of each row operable to effect said axial displacement and rotation of the keybuttons about their axes, and means adapted to operate simultaneously the said devices.

4. In a keyboard for a key-operated typographical machine, the combination of a row of multiple-faced keybuttons, a pivotal axis appropriate to each keybutton about which it can be rotated to bring a desired face into operative position, a locking device for each keybutton rendered active and inactive by axial displacement of the keybutton, a longitudinally movable bar and means carried by said bar adapted during its longitudinal movement to effect the successive operations of axially displacing and rotating the keybuttons.

5. In a keyboard for a key-operated typographical machine, the combination of a row of multiple-faced keybuttons, a pivotal axis appropriate to each keybutton about which it can be rotated to bring a desired face into operative position, a locking device for each keybutton rendered active and inactive by axial displacement of the keybutton, a rotatable shaft, and means carried by said shaft adapted during its rotation to effect the successive operations of axially displacing and rotating the keybuttons.

6. In a keyboard for a key-operated typographical machine, the combination of a row of multiple-faced keybuttons, a pivotal axis appropriate to each keybutton about which it can be rotated to bring a desired face into operative position, a locking device for each keybutton rendered active and inactive by axial displacement of the keybutton, a longitudinally movable bar, and cam members and pawls carried by said bar

adapted respectively to axially displace and rotate the keybuttons during longitudinal movement of the bar.

5 7. In a keyboard for a key-operated typographical machine, the combination of a row of multiple-faced keybuttons, a pivotal axis appropriate to each keybutton about which it can be rotated to bring a desired face into operative position, a locking device for each keybutton rendered active and inactive by axial displacement
10 of the keybutton, a rotatable shaft, cam members and toothed segments carried by said shaft adapted respectively to axially displace and rotate the keybuttons during rotation of the shaft.
15 8. In a keyboard for a key-operated typographical machine, the combination of a plurality of rows of multiple-faced keybuttons, a pivotal

axis appropriate to each keybutton about which it can be rotated to bring a desired face into operative position, a locking device for each keybutton rendered active and inactive by axial displacement of the keybutton, a rotatable shaft appropriate to each row, means carried by said shaft adapted during its rotation to effect the successive operations of axially displacing and rotating the keybuttons, and means adapted to rotate simultaneously all said shafts.

9. A combination according to claim 7, characterized by two cam members on the rotatable shaft, appropriate to each keybutton, respectively adapted to effect axial displacement of the keybutton when the shaft is rotated in opposite
15 directions.

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