March 1, 1932. E. G. ROBESON 1,847,538

FINGER KEY

Filed Aug. 25, 1927

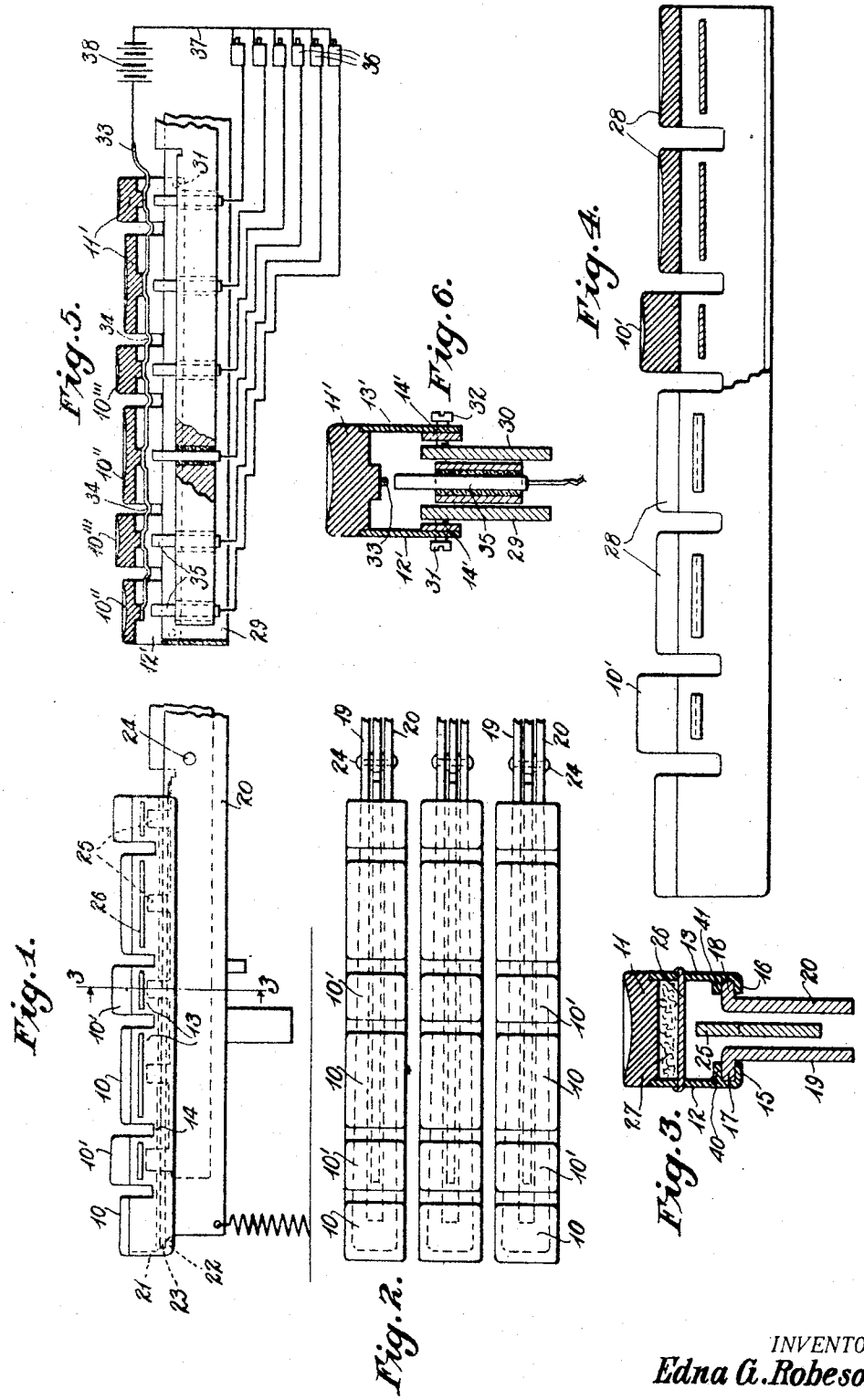


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

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Patented Mar. 1, 1932

1,847,538

UNITED STATES PATENT OFFICE

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FINGER KEY

Application filed August 25, 1927. Serial No. 215,387.

The invention relates to finger keys, and has as an object the provision of a key for operating typewriters, tabulation machines, printing telegraphs or the like, which has a resilient action under the finger combined with a hard portion for contact with a selective means.

It is a further object of the invention to provide a finger key having a resilient action which may be applied to operate either mechanical or electrical selective means.

It is a further object of the invention to provide a key having a plurality of finger pieces combined into a unitary structure.

It is a further object of the invention to provide a key provided with alternating relatively raised and depressed finger elements for the use above referred to.

It is a further object of the invention to provide a key provided with relatively wide finger elements with relatively narrow finger elements interspersed there between, whereby to condense the key board made up of such keys.

Further objects of the invention will appear from the following description when read in connecting with the accompanying drawings, wherein

Fig. 1 is a side view of a single key structure;

Fig. 2 is a plan view of a plurality of the keys shown in Fig. 1;

Fig. 3 is a vertical section on line 3, 3 of Fig. 1, upon an enlarged scale;

Fig. 4 is a side view, partly broken away, of the form of the invention shown in Fig. 1, showing a different arrangement of the raised and depressed keys;

Fig. 5 is a central vertical section of a modified form of the invention adapted for electrical use, showing diagrammatically a plurality of electric circuits which may be controlled by the separate finger pieces;

Fig. 6 is a vertical section upon an enlarged scale through one of the finger pieces of Fig. 5.

As shown in Figs. 1 to 4 inclusive, the device is applied to a key bar of the type wherein a selecting bar is pivoted at 24 between the side members 19, 20 of a printing bar and the character selected depends upon the distance from pivot 24 of the element 25 of the selecting bar which is chosen and through pressure upon which the selecting bar is depressed about pivot 24. Such a key bar is described and claimed in my Patent 1,454,692, dated May 8, 1923. As there shown, the invention embodies a plurality of alternately depressed and raised finger pieces 10, 10′, the respective finger contacting elements 11 of which are desirably formed of a material such as hard rubber, each supported by separated side walls 12, 13, the lower portion of which side walls are integral with the side walls 14, which latter are unitary at each side upon a single type bar, and are shown as provided with flanges 15, 16, which underlie flanges 17, 18, respectively, carried by the portions 19, 20 of the key bar. The flanges 17 and 18 are shown as wider at the end 21 of the key board than at the end 20 of the finger piece, as shown by the dotted line in Fig. 2, whereby to prevent the slippage of the finger piece upon the key board. To prevent forward slippage of the finger piece upon the key bar, the ends of the side members 12, 13, are shown as formed with a hook shaped portion 22 underlying an end flange 23 upon the key bar. To prevent downward slippage of the portions 14 on the supporting structure, there are shown inwardly directed flanges 40, 41 formed on said portions 14 and overlying the flanges 17, 18.

To aid the selection of the desired key 10, 10′ in Fig. 1, the alternate keys 10, 10′ are shown as depressed and raised above the preceding key, or when the device is applied to a key bar of the character shown in my former patent above referred to, wherein the distance from the pivot 24 of the elements 25 which the finger pieces operate determines the selection of the character to be chosen it is immaterial how many finger pieces between the desired projection 25 and the end of the key are pressed upon at one time since only the projection 25 nearest the pivot 24 will be operated. Therefore, when so used the finger pieces 10 may be relatively narrow in the direction of the length of the unitary finger

piece, and the finger guided by the raised pieces may readily select the desired character.

As shown in Figs. 1 to 4 inclusive, the finger pieces are formed with the side walls 12, 13 of a resilient material, such as comparatively the flexible rubber, having only sufficient stiffness to retain the finger pieces normally in their elevated position.

To take the operating wear against the projection 25 there is shown a hard plate 26, desirably of metal, shown as carried by the side walls 12, 13, which plates are individual to each finger piece 10.

The plates 26 are shown as spaced downwardly from the finger contacting elements 11, thus providing a resilient action of the members 11, before actual operating contact results, to lessen the shock of operation upon the finger. If desired the space between the plates 26 and the elements 11 may be filled with a soft material 27, Fig. 3, as sponge rubber.

The elevated keys 10′ will desirably be placed in alinement across the key board upon which the invention is applied. According to another form of the invention, the elevated keys 10′ may, as shown in Fig. 4, be separated by two or more depressed keys, as indicated at 28 in said figure, wherein the thus separated elevated keys will still act to guide the finger of the user either by coming into contact with the raised key elements to the rear of the desired key, or by slight contact with the next raised key in advance of the depressed key 28.

In the form of the invention illustrated in Figs. 5 and 6, the side members 14′ are shown as secured to the vertical members 29, 30 of the contact carrying bar, by means of screws 31, 32. For purposes of illustration, this form of the invention shows the application of the invention to a key board for electrical action, and as there shown a wire 33 passes continuously under the finger pieces 10″, 10‴, having loops 34 between the separate elements 11′ to provide flexibility of the wire, so that only the desired electrical contact will be produced.

As shown in Figs. 5 and 6, the supporting members 29, 30, carry insulated contact members 35, each individually connected to solenoids 36, which solenoids in turn are shown as connected by means of a common wire 37 to a source of electrical energy 38, to the remaining pole of which the wire 33 is shown as connected.

With this form of the invention, the pressure upon a desired finger piece 10″, 10‴, will cause the actuation of a selected solenoid 36, which may be made to operate any desired mechanism, not shown, as of a printing telegraph, an electrical typewriter, an electrical tabulating mechanism, or the like.

If desired, the plates 26 in the form of the invention of Figs. 1 to 4 may have substituted therefor a metallic member, as a wire, small plate, or the like, carried, as shown, in the case of the wire 33 of Fig. 6, in which event the resilient action of the key will be supplied by the side walls 12′, 13′ of this form of the invention, both forms of the invention providing finger pieces arranged upon keys in batteries as it were, and because of the relative arrangement of the elevated and depressed keys a full key board may combine a larger number of keys in the same space than heretofore possible.

Minor changes may be made in the physical embodiment of the invention within the scope of the appended claims without departing from the spirit thereof.

I claim:

1. A key member comprising unitary side walls, separated side walls carried by said unitary side walls, a plurality of finger pieces carried by said separated side walls, said separated side walls formed of resilient material, normally holding said finger pieces in elevated position.

2. A key device comprising, in combination, a plurality of keys having side walls separated from the side walls of adjacent keys in their upper portion and integral therewith in their lower portion, each individual key having a relatively hard finger contacting portion, and a relatively hard selective means contacting portion, said separated side walls being formed of resilient material to normally space said last named hard portion above means to be contacted and yielding to permit of such contact.

3. A key device comprising, in combination, a plurality of finger pieces, resilient side walls secured to said finger pieces, the side walls of each finger piece separated from adjacent side walls in their upper portion and integral therewith throughout their lower portion, a common electrical conductor attached in turn to said finger pieces and capable of independent movement with each finger piece, means for supporting said side walls independent of means to be contacted by said conducting element, said separated side walls normally supporting said conducting element spaced from means to be contacted thereby and yielding to permit of such contact.

4. A key board comprising, in combination, a plurality of finger pieces arranged in a plurality each of longitudinal and transverse rows, the pieces in each of certain of said transverse rows lying in a common plane, the pieces in other transverse rows interspersed between the rows in said common plane arranged in a second common plane elevated thereabove.

5. A key board comprising, in combination, a plurality of finger pieces arranged in a plurality of longitudinal and transverse

rows, the pieces in each of a plurality of transverse rows lying in a common plane, the pieces in other of the transverse rows interspersed between the rows in said common plane lying in a second common plane raised above the first named common plane, the pieces in the raised rows being more narrow in the direction of the longitudinal rows than the keys in the first named plane.

6. A key device comprising, in combination, a pair of spaced flexible rubber side walls attachable to a key bar, a plurality of pairs of spaced separated side flexible rubber walls each integral at its lower edge with one of said first named walls, and a finger piece connected to the upper edges of each of said pairs.

7. A key device comprising, in combination, a pair of spaced flexible rubber side walls attachable to a key bar, a plurality of pairs of separated flexible rubber side walls each integral at its lower edge with one of said first named side walls, a rigid contact member connecting the walls of each of said pairs, a finger piece connected to the upper edges of each of said pairs and spaced above said contact members, and resilient cushioning material filling the said space.

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