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MOUNTING FOR KEY BUTTONS

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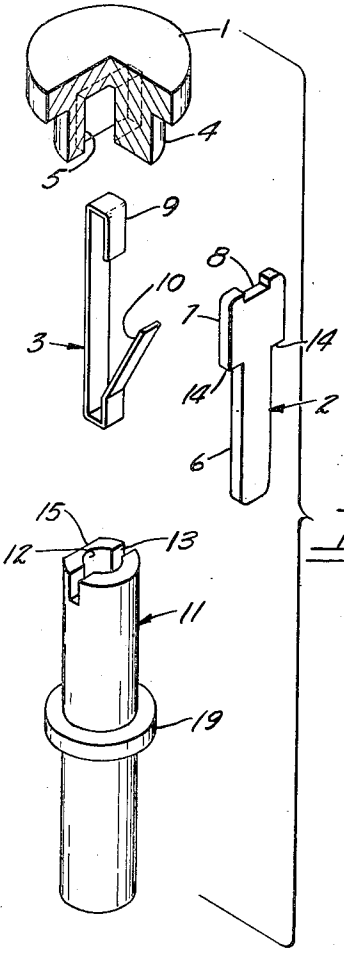


Fig. II

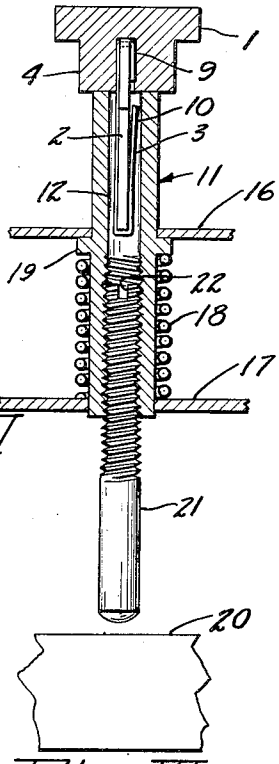


Fig. III

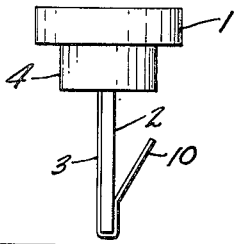


Fig. I

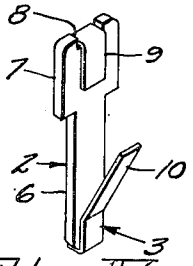


Fig. IV

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MOUNTING FOR KEY BUTTONS

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3 Claims. (Cl. 197—102)

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This invention relates to manually operated keyboards and in particular to an improved mounting for attaching a key button to a key of the keyboard.

Many key operated devices such as typewriters, adding machines, and calculators are equipped with molded plastic key buttons that are permanently attached to the keys. These buttons are highly satisfactory as long as there is no necessity for temporarily removing and replacing any of the key buttons.

The principal object of this invention is to provide a key button mounting for attaching a key button to the end of a tubular key in a manner such that the key button may be readily removed and returned to position without the use of tools and without affecting the strength or serviceability of the key button support.

Another object of the invention is to provide a spring held structure of great strength for mounting a conventional molded key button on the end of a tubular key.

More specific objects and advantages are apparent from the following description of a preferred embodiment of the invention.

According to the invention an ordinary molded plastic key button is permanently mounted on an end of the sheet metal tongue that is insertable into the end of a tubular key. A formed sheet metal spring encircles the tongue in its longitudinal direction and includes an inclined resilient portion that resiliently engages the side of the bore of the tubular key. In this structure the tongue provides the strength for supporting the key button and in this respect corresponds to the typewriter or adding machine keys on which such a button is usually mounted.

A preferred embodiment of the invention is illustrated in the accompanying drawings.

In the drawings:

Figure I is a side elevation of the completely assembled tongue and button when separated from the key on which it is ordinarily mounted.

Figure II is an isometric exploded view of a portion of the tubular key, the key button and the mounting for the button.

Figure III is a longitudinal section of the improved key and button in completely assembled form.

Figure IV is an assembly view of the tongue and spring prior to the addition of the molded finger button.

These specific figures and accompanying description are intended merely to illustrate the invention but not to impose limitations on its scope.

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Referring now to the drawing the improved mounting for a key button 1 includes a rigid sheet metal tongue 2 and a formed spring 3. As seen in Figure II the key button 1 may have a generally circular face and a cylindrical shank 4 in which is molded a rectangular recess 5. The tongue 2 is generally T-shaped in elevation and comprises a stem portion 6 and a wider head portion 7. The head portion 7, furthermore, has a notch 8 cut in its end. The spring 3 is formed as a band that nearly encircles the tongue 2 along its longitudinal axis and includes a hook portion 9 that fits into the notch 8 in the head portion 7 of the tongue 2. The other end of the spring 3 fits snugly around the stem 6 and includes a section 10 that is bent away from the stem 6 so as to normally stand at an acute angle thereto.

After the spring 3 is assembled on the tongue 2 (as seen in Figure IV) the molded finger button 1 is permanently mounted on the head portion 7 of the tongue 2 with the hooked end portion 9 of the spring 3 forced into the rectangular recess 5 of the button 1.

This assembly of the key button 1, tongue 2 and spring 3 fits on the end of a tubular key shank 11 with the stem 6 of the tongue 2 fitting into a bore 12 extending through the tubular key. A transverse slot 13 across the end of the key shank 11 receives shoulders 14 of the tongue 2 to prevent rotation of the key button 1. The tubular key 11 itself has a flat side 15 to prevent rotation of the key as a whole.

Referring now to Figure III the tubular key 11 is mounted in alined holes in spaced apart mounting plates 16 and 17. The hole in the mounting plate 16 is shaped to match the flat 15 on the side of the tubular key 11. The key is continuously urged toward its retracted or idle position by a helical compression spring 18 that is sleeved over the key 11 and that is held compressed between the mounting plate 17 and a shoulder 19 of the key. A latch bar, not shown, engages shoulder 19 to hold the key in operative position after it has been manually depressed.

As indicated in Figure III, the key is arranged to operate a member 20 and is operatively connected thereto by a threaded stud 21 screwed into the bore 12 of the tubular key 11. The end of the stud 21 within the key 11 has a slot 22 to receive a screwdriver for adjusting the position of the stud 21 with respect to the key. To make this adjustment the key is depressed to bring the stud 21 into operative connection with the member 20 and the button 1 including the tongue 2 and spring 3 is then removed and a screwdriver inserted to rotate the stud and bring the mem-

ber 20 to its desired position. After the screwdriver is removed the button is easily replaced and the inclined portion 10 of the spring 3 resiliently engages the side of the bore 12 to hold the key button in place.

In this assembly the tongue 2 which is ordinarily made of sheet metal provides all the strength required to hold the key button in place as the key is being manipulated, while the spring 3 serves to hold the button in place in the key while yet permitting its easy removal and replacement should adjustment of the stud 21 be required. Since there is no need at any time to disturb the mounting of the key button 1 on the tongue 2 and spring 3 the button may be either molded directly in place or pressed into place thus making an extremely durable assembly.

Various modifications and specific details and parts of the key button mounting assembly may be made without departing from the spirit and scope of the invention.

Having described the invention, I claim:

1. A mounting for holding a removable key button in place, said mounting comprising a rigid stem one end of which is receivable in the bore of a tubular key, a spring that encircles a portion of the stem along its longitudinal axis and that is frictionally engageable with the bore of the tubular key, and a head portion on the stem to receive and support the key button.

2. In a key and removable key button assembly, in combination, a tubular key, the key having a shallow groove across its end, a flat rigid stem, said stem having a first portion that fits within the tubular key, said stem having a head portion with shoulders that engage the cross groove of the key, a key button mounted on the head portion of the stem and a flat spring having a portion secured under the key button and having another portion engaging the bore of the tubular key to hold the key button and stem in place.

3. In a key and removable key button assembly, in combination, a tubular key, the key having a shallow cross groove across its end, a flat rigid stem having a first portion that fits into the tubular key and a head portion with shoulders that fit the cross groove, a key button mounted on the head portion, said head portion having a notch in its end surface, and a flat spring that encircles the stem along its long axis with one portion of the spring held in said notch beneath the key button and with another portion engaging the side of the bore of the tubular key.

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