Dec. 19, 1950 J. FERRIERA 2,534,431

STRING TENSIONING MEANS

Filed March 26, 1948

Fig. 1.

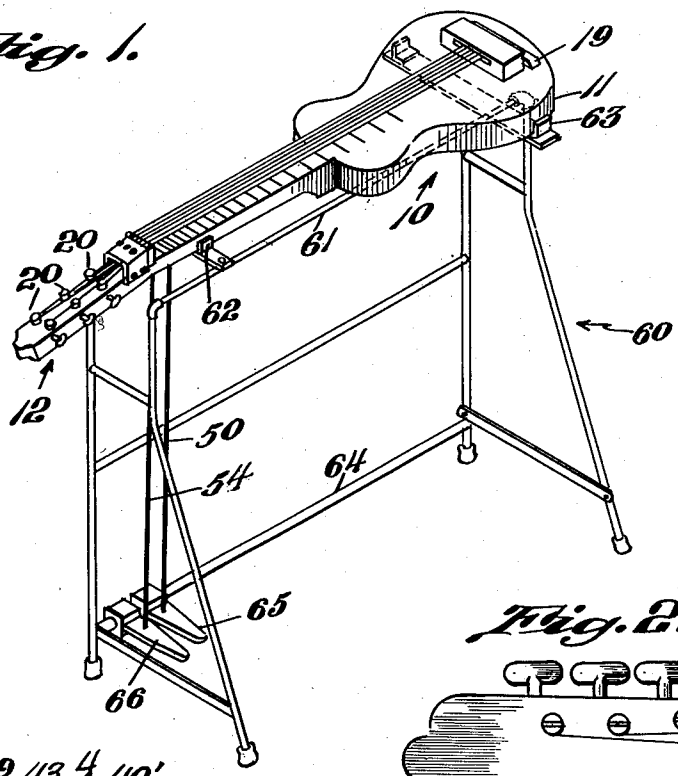


Fig. 2.

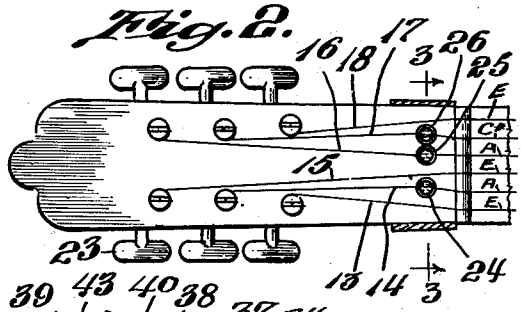


Fig. 3.

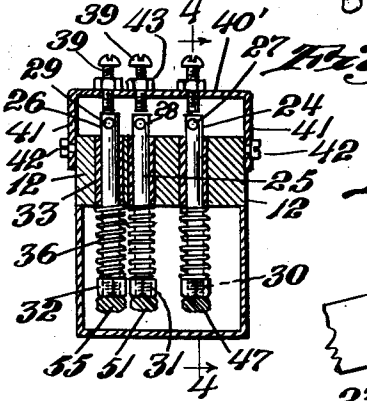


Fig. 4.

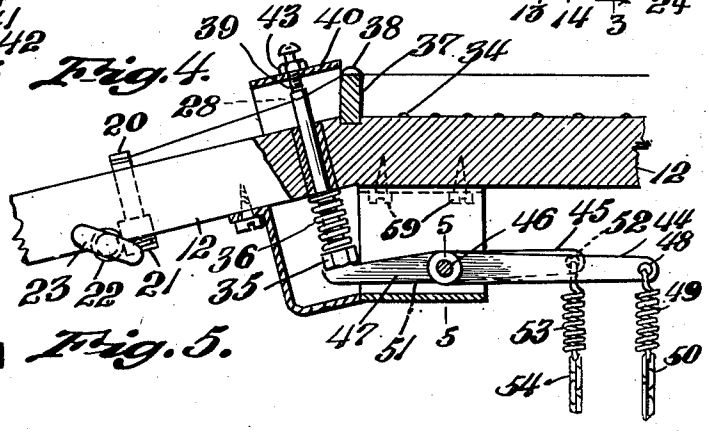
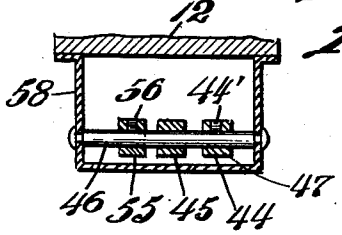


Fig. 5.



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STRING TENSIONING MEANS

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2 Claims. (Cl. 84—312)

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This invention relates to stringed musical instruments, particularly the Hawaiian guitar.

In playing on the Hawaiian guitar, the strings are plucked with the right hand and stopped at the frets by a so-called steel held in the left hand and pressed against the strings. The use of the steel for stopping the strings at the frets to shorten or lengthen the vibrating portion of the string limits the choice of notes which may be played harmoniously in the accompaniment to the melody.

The general object of the invention is the provision of means for varying the tension on certain strings of a guitar during the playing thereof, so as to raise or lower the normal pitch of the strings to provide for a greater choice of notes whereby to give added body, variety, and more completeness in the accompaniment to the melody.

Another object of the invention is the provision of means for changing the tension of certain strings of a guitar which will be manually operable by parts of the body other than the hands of the player.

Another object of the invention is the provision of means as set forth in the preceding object which will be operable by the feet of the player.

A more specific object of the invention is the provision of resilient means operable for changing the tension on certain strings of a guitar.

Another object of the invention is the provision of means for changing the tension of certain strings of a guitar from an initial predetermined tension to a different predetermined tension.

With these and other objects in view, the invention consists of certain novel features of construction as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings:

Figure 1 is a perspective view illustrating a guitar embodying one form of the invention and supported on a stand;

Figure 2 is an end view of the neck portion of the guitar;

Figure 3 is a sectional view taken along lines 3—3 of Figure 2;

Figure 4 is a longitudinal sectional view of a fragmental portion of the neck of the guitar taken substantially along lines 4—4 of Figure 3; and

Figure 5 is a sectional view taken substantially along lines 5—5 of Figure 4.

The invention in general comprises providing means to engage certain strings of a guitar and which means may be removed during the playing of the guitar to decrease the normal pitch of the strings. The invention contemplates the initial tightening of the strings to the normal pitch of the instrument, and then through the means provided, releasing this initial tension and placing on the strings another predetermined but lesser tension.

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Referring to the drawings for a more detailed description of the invention wherein I have shown a preferred embodiment thereof, 10 designates generally a guitar arranged to be played in Hawaiian style. The guitar consists of a usual body 11 having a long fretted neck 12 with six strings 13, 14, 15, 16, 17, and 18 which are usually referred to as E, A, E, A, C#, and E strings respectively. Each string is fastened at one end to the body 11 by a tail piece or projection 19 and the other to pegs 20 at the head or extremity of the neck 12. The pegs 20 are each individually turned to tighten the strings by a usual mechanism (see Fig. 4) such as a worm 21 secured to the peg 20 and a worm wheel 22 operable by a key 23 to place proper tension on the strings.

In order to provide for changing the tension of certain strings of the guitar, for example strings 14, 16, and 17, I provide a plurality of similar pins or like members 24, 25, and 26, each of which is provided with an opening 27, 28, and 29 and a threaded portion 30, 31, and 32 respectively. Each pin is similarly mounted for axial movement in a bearing bushing 33 which extends through the neck 12 at a location spaced from the pegs 20 and the fret 34. Each pin extends above and below the neck 12 with the openings 27, 28, and 29 positioned to have passed therethrough the strings 14, 16, and 17. Nuts or the like 35 engages the threaded portion of the pins and a compression spring 36 encircles each pin between the nut 35 and the neck 12. A projection 37 is provided for spacing the strings from each other and above the neck 12. This projection 37 has a plurality of spaced slots 38 through which the strings extend.

In the initial tuning of the guitar, the strings 13, 15, and 18 are tightened by means of the pegs 20 only to tension these strings to the normal pitch thereof, while the strings 14, 16, and 17 are tightened by means of the pegs 20 and the pins 24, 25, and 26 to tension these latter strings to the normal pitch thereof. The pins are moved to place a tension on the strings by turning the nuts 35 in the proper direction which adjusts the tension of the springs 36. Thus each string is tensioned to its normal pitch. Moving the pins upwardly will, of course, remove tension on the strings 14, 16, and 17 and consequently change the pitch of these strings in amounts depending upon the distance of movement of the pins.

In order to control or predetermine the distance of movements of the pins 24, 25, and 26, so as to place a second predetermined tension on the strings 14, 16, and 17 adjustable stop screws 39 are provided. Each screw is mounted on a support 40 of a U-shape providing arms 41 between which engage the side of the neck 12 (see Fig. 3). Cap screws 42 extend through the arms 41 and threadedly engage the neck 12 to secure

the support 40 in place. The screws 39 threadedly extend through the upper wall 40' of the support 40 in line with the pins to be engaged thereby. A lock nut 43 is provided for maintaining the proper spacing between the screws 39 and the ends of the pins.

In the present embodiment of the invention the pins 24, 25, and 26 are manually moved by means of levers 44 and 45, mounted on a shaft 46. The lever 44 is fixed to the shaft 46 by means of a set screw 44' so as to rotate therewith, while the lever 45 is free to move about the shaft 46. Arm 47 of lever 44 extends into engagement with the nut 35 of the pin 24 and the other arm thereof is provided with an opening 48 in which is received the end of a compression spring 49 attached to a chain 50. Moving the lever 44 in a clockwise direction will move the shaft 46 therewith. The lever 45 has an arm 51 extending into engagement with the nut 35 of the pin 25, and the other arm thereof is provided with an opening 52 in which is also received the end of a pull spring 53 attached to a chain 54. Moving this lever 45 in a clockwise direction will also move the pin 25 upwardly against the pressure of the spring 36. When the levers 44 and 45 are released, the springs 46 will act to return the pins to initial position. In order to move the pin 26 an arm 55 is attached to the shaft 46 by means of a set screw 56 so as to rotate therewith. Rotating of the shaft 46 by means of the lever 45 will also move the pin 26 upwardly in unison with the pin 24. The shaft 46 is supported in the side walls of a housing 58 which is secured to the under side of the neck 12 such as by means of cap screws 59.

In order that the levers may be operated by the foot of the player, the guitar is mounted on a stand designated generally 60. This stand is provided with upper supporting bars 61 to which is fastened clamp elements 62 and 63 between which is positioned and secured the guitar. The stand is provided with a lower bearing rod 64 to which is mounted the foot operated treadles 65 and 66. The end of the chain 50 is fastened to the treadle 65, while the chain 54 is fastened to the treadle 66.

It will be apparent that by moving the treadle 65 downwardly, the lever 44 will be swung about its pivotal axis and move pins 24 and 26 upwardly against the stop screws 39. Further movement of the treadle in the same direction will be absorbed in the spring 49. Likewise, moving the treadle 66 will swing the lever 45 about the shaft 46 to actuate the pin 25 in the manner above described for pin 24. The release of either lever will permit the spring 36 to return the pins to the initial position and again place the initial tension on the strings.

I claim:

1. In a stringed musical instrument having a plurality of strings, a plurality of pins reciprocably mounted, each operable upon one of said strings to control the tension and consequently the tone thereof, a lever for each of said plurality of pins, a shaft on which said levers are mounted, means for rotating said shaft, a plurality of said levers being secured to said shaft to simultaneously move a plurality of pins and change the tone of a plurality of strings.

2. In a stringed musical instrument having a plurality of strings, a plurality of pins reciprocably mounted, each operable upon one of said strings to control the tension and consequently the tone thereof, a lever for each of said plurality of pins, a shaft on which said levers are mounted, means for rotating said shaft, a plurality of said levers being secured to said shaft to simultaneously move a plurality of pins and change the tone of a plurality of strings, a lever rotatable about said shaft and separate means to rock said lever about said shaft as a fulcrum to operate another of said pins.

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