Oct. 3, 1950 W. E. SMITH 2,524,144

PITCH CHANGING DEVICE FOR STRINGED MUSICAL INSTRUMENTS

Filed April 11, 1947

Fig. 1

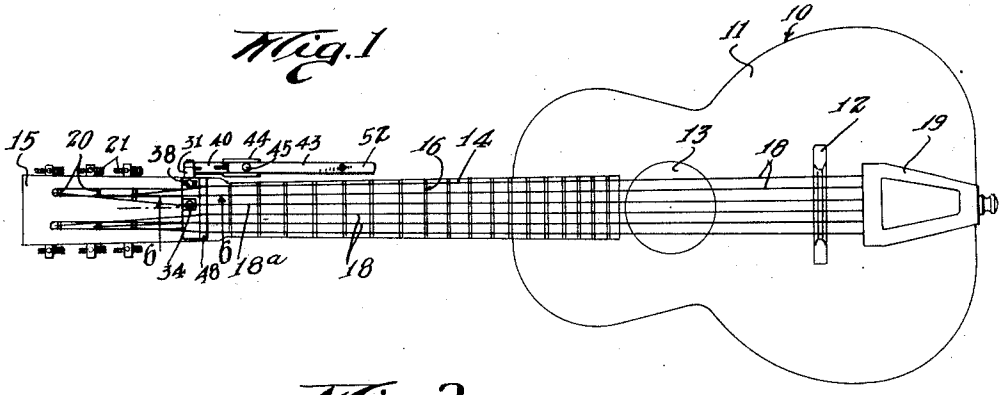


Fig. 2

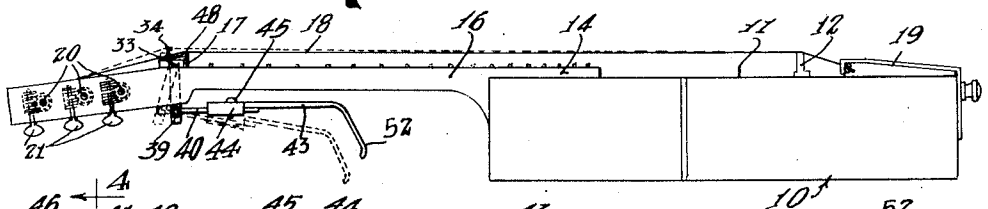


Fig. 3

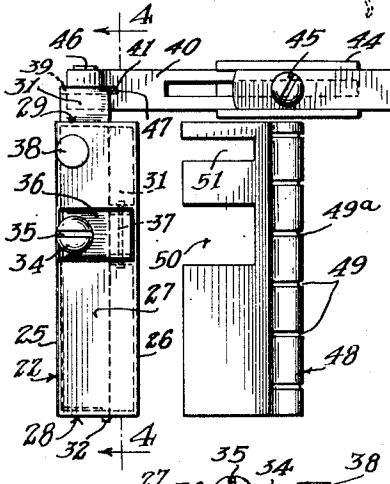


Fig. 4

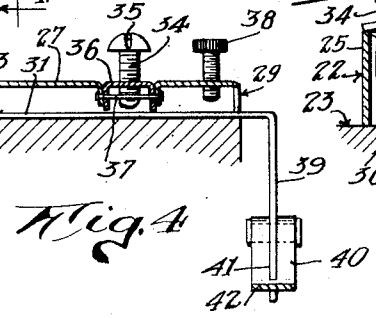


Fig. 5

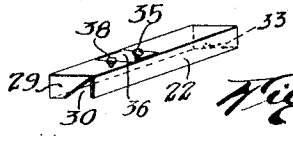


Fig. 6

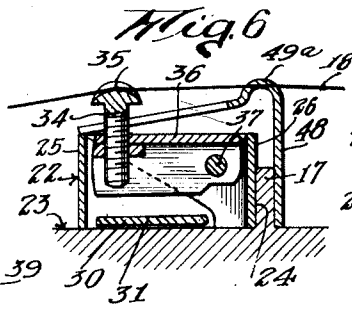
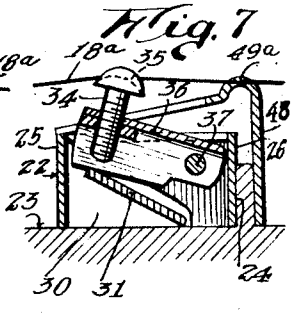


Fig. 7



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PITCH CHANGING DEVICE FOR STRINGED MUSICAL INSTRUMENTS

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5 Claims. (Cl. 84—312)

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This invention relates to a device for changing the pitch of a string of the musical instrument and is particularly directed to an improved form of attachment for accomplishing this purpose.

The principal object of this invention is to provide a device for changing the pitch of a string of a lute type musical instrument.

Another object is to provide a removable attachment for a convenient form of musical stringed instrument which is operable to change the pitch of a string thereof which is held in position solely by the tension of the string.

Another object is to provide a device of this type which is applicable to either a conventional type or Hawaiian type guitar.

A more particular object is to provide such a pitch changing device for a string of a guitar or a similar instrument which may be operated by the leg or knee of the musician while playing the instrument.

A further object is to provide a device of this type which may be readily installed and removed without marring or defacing the instrument and which is composed of relatively few parts economical to manufacture.

Other objects and advantages will appear hereinafter.

In the drawings:

Figure 1 is a top plan view of the guitar showing a preferred embodiment of my invention mounted in operative position thereupon.

Figure 2 is a side elevation thereof.

Figure 3 is a plan view of certain parts of my improved form of attachment illustrated on an enlarged scale.

Figure 4 is a sectional elevation taken substantially on the lines 4—4 as shown in Figure 3.

Figure 5 is a perspective view of a box member employed in connection with my invention.

Figure 6 is a transverse sectional elevation taken substantially on the lines 6—6 as shown in Figure 1 and illustrating the string engaging element in its lower position.

Figure 7 is a view similar to Figure 6 illustrating the string engaging element in its upper position.

Referring to the drawings, the attachment embodying my invention is shown in connection with a conventional form of guitar, but it is recognized that other stringed instruments of the lute type also may be employed.

The guitar generally designated 10 is provided with the usual sounding board 11, bridge 12, central opening 13, neck 14 and neck head 15.

The usual fret board 16 may be provided and at one end of this fret board is the usual nut 17. A plurality of strings 18 extend from the tension bracket 19 over the bridge 12 and nut 17 and each of the strings 18 is connected to one of the tuning pins 20. The usual keys 21 having a worm and wheel connection with the pins 20 are provided on the neck head 15.

In accordance with my invention I provide a box shaped member 22 which rests on the upper

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flat surface 23 of the neck head 15 and lies against the side 24 of the nut 17. This box shaped member 22 is provided with parallel sides 25 and 26 joined by an integral top wall 27. End members 28 and 29 are provided at opposite ends of the box member 22. The end member 29 is triangular shaped as shown in Figure 5, defining an opening 30 through which an actuating bar 31 is adapted to extend into the interior of the box member 22. A pinlike projection 32 is received in an opening 33 provided in the end member 28. The actuator bar 31 may be formed from a flat strip material and is adapted to lie on the upper surface 23 of the neck head 15 within the box member 22.

A string engaging element 34 may be provided at a location directly below one of the strings 18^a and this element 34 may take the form of a screw having a slot 35 in its head portion for reception of the string 18^a. The screw 34 is threaded into a rockable element 36 and this element 36 is pivotally supported on the base member 22 by means of the pivoted pin 37 (see Figure 4). When the actuator bar 31 is rotated about the axis of its projection 32 the actuator moves from the position illustrated in Figure 6 to the position illustrated in Figure 7, thereby moving the rockable element 36 and the screw 34 upwardly in pivotal motion about the pin 37 and thereby increasing the tension in the string 18^a. The extent of movement of rockable element 36 and string engaging screw 34 is limited by an adjustable screw element 38 which is threaded into the base member 22 and extends downwardly to contact the actuator bar 31. This adjusting screw 38 acts as a stop to limit the pivotal movement of the actuator bar 31 in the direction to increase the tension in the string 18^a.

The actuator bar 31 is provided with a downwardly extending portion 39 which is pivotally connected to a weight 40 having a central slot 41. The weight 40 has a horizontally extending portion 42 which is adjustably connected to the operating lever 43 by means of the connection 44 and set screw 45. The pivot pin 46 connects the downwardly extending arm 39 to the weight 40 and the arm 39 extends within the slot 41. The end 47 of the slot 41 is engaged by the arm 39 to limit pivotal movement of the members 42 and 43 in a clockwise direction with respect to the arm 39 as viewed in Figure 2. The purpose of this pivotal connection between the arm 39 and the member 42 is to permit the member 42 and lever 43 to be pivoted to an inoperative position when the guitar 10 is to be placed within a case (not shown).

The connection piece 44 enables endwise adjustment to be made of the operating lever 43 with respect to the member 42.

In operation, the flange 48 is placed in position over the nut 17 in order to raise the position of the strings 18 away from the fret board 16. The flange may be grooved as shown at 49, if desired, to receive each of the strings 18 of

the guitar. One of these grooves 49a is in alignment with the groove 35 in the string contacting screw element 34. Cutout slots 50 and 51 are provided in the flange 48 to receive the rockable element 36 and the adjusting screw 39 respectively. The position of the flange 48 as shown in Figure 3 is not its operative position on the instrument, but the flange 48 has been moved to the right to expose the base member 22 and its associated parts.

After the strings are placed in position over the flange 48 and tuned by means of the tuning keys 21, the actuator bar 31 is inserted into the base member 22 through the opening 30 adjacent the end member 29 and the projection 32 is inserted within the opening 33 in the end member 28.

The actuator bar 31 is turned about its pivot 32, thereby increasing the tension in the string 18a. The string is then plucked to determine its pitch with the tension increased. The adjustment screw 38 is turned until the desired pitch is obtained when the actuator bar 31 is moved to the end of its pivotal travel.

With the instrument supported on the lap of the musician the downwardly extending element 52 at the forward end of the lever 43 is in position to be contacted by the musician's knee. Movement of the knee towards the neck head 15 serves to pivot the lever 43 and arm 39 about the pivot pin 32 in a counterclockwise direction as viewed in Figure 2, thereby moving the string contacting element 34 in a direction to increase the tension in the string 18a. With this arrangement certain chords not otherwise available may be played on the instrument. The pitch of the string 18a thus can be varied at the will of the musician without requiring the use of either hand and this is an important advantage since one hand may be engaged in plucking the strings while the other hand is used in manipulating a steel bar on the strings. It will be observed further that no springs are employed in connection with my invention and that the tension of the spring 18a itself is used to return the parts of the mechanism to their inoperative position. The pitch of the string 18a therefore remains true in either of the positions of the mechanism.

No screws, bolts, or other fastening devices are used to mount the attachment on the instrument and, therefore, defacement or marring of the instrument is avoided. The tension of the string 18a acting on the base 22 through the elements 34 and 36 is sufficient to maintain the base 22 against displacement on the surface 23 and against the side 24 of the nut 17. Accordingly, if it should be desired to remove the attachment, this can be accomplished without removing any screws, bolts or other fastenings and after removal, the musical instrument may be played in the normal fashion. The attachment is universal in application in that it may be mounted on any guitar without special preparation. The knee operation of the actuator is an important feature since it is very simple in operation and not apt to get out of order. No pedals are required and the mechanism folds out of the way when the instrument is to be placed in its case.

Having fully described my invention, it is to be understood that I do not wish to be limited to the details herein set forth, but my invention is of the full scope of the appended claims.

I claim:

1. A device for changing the pitch of a musical instrument string, comprising a string engaging element, a base member, a rockable element pivotally mounted on the base member and carrying said string engaging element, an actuator axially insertable into the base member, the actuator being rackable to engage one of said elements whereby the string engaging element may be moved in a direction to change the tension in the string, and means for turning the actuator.

2. A device for changing the pitch of a string of a musical instrument, such as a guitar, comprising a string engaging element, a generally rectangular base member having an opening at one end, a rockable element pivotally mounted on the base member and carrying said string engaging element, a flat actuator strip insertable into the opening in the base member and adapted to engage the rockable element whereby the string engaging element may be moved in a direction to change the tension in the string, and means for turning the actuator.

3. In a device for changing the pitch of a string of a musical instrument, such as a guitar, the combination of a base member resting against the instrument, a rockable element pivotally mounted on the base member, a string engaging element adjustably mounted on the rockable element, and an actuator pivotally associated with the base member and adapted to engage one of said elements whereby the string engaging element may be moved in a direction to change the tension in the string.

4. An attachment for a musical instrument having a string extending over a nut, comprising in combination: a base member resting on the instrument against one side of the nut, a string engaging element pivotally supported relative to the base member, the tension in the string acting against said element to maintain the base member in position against displacement, an actuator pivotally associated with the base member adapted to move the element in a direction to increase the tension in the string, and an adjustable element on the base member adapted to limit the extent of pivotal movement of the actuator.

5. In a device for changing the pitch of a string of a musical instrument, such as a guitar, the combination of: a base member resting against the instrument, a movable element, a string-engaging element adjustably mounted on the movable element, means connecting the movable element with the base member for controlling the motion of the movable element with respect to the base member, the tension in the string acting against the string-engaging element to maintain the base member in position against displacement, and an actuator pivotally associated with the base member and adapted to engage one of said elements, whereby the string-engaging element may be moved in a direction to change the tension in the string.

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