Oct. 18, 1932. J. A. RYAN 1,883,410

DEVICE FOR CHANGING THE TONE OF THE STRING OF A MUSICAL INSTRUMENT

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Fig. 1.

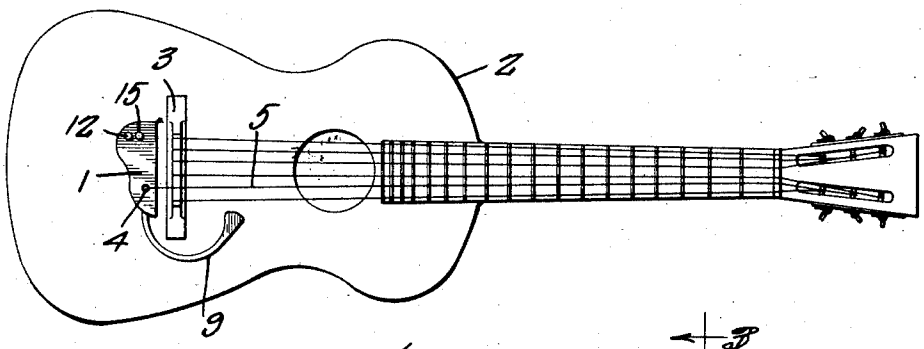


Fig. 2.

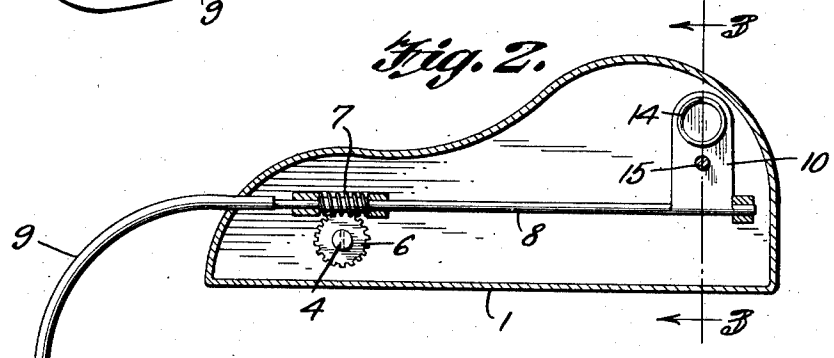
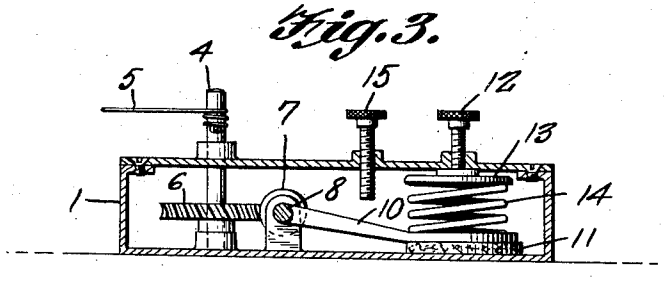


Fig. 3.



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DEVICE FOR CHANGING THE TONE OF THE STRING OF A MUSICAL INSTRUMENT

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Fig. 4.

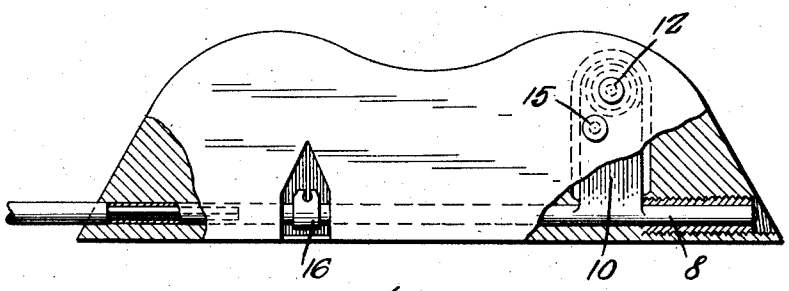


Fig. 5.

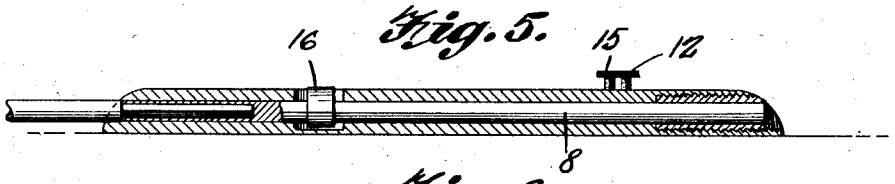


Fig. 6.

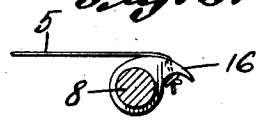


Fig. 7.

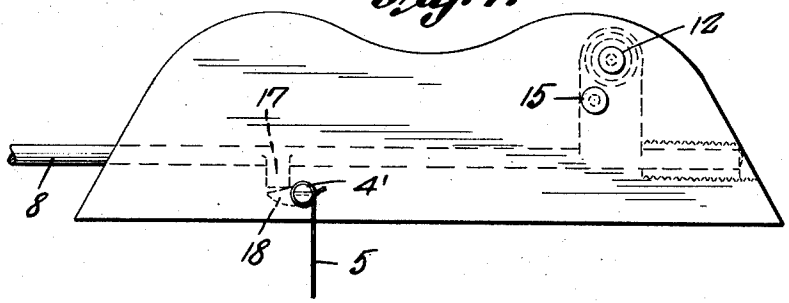
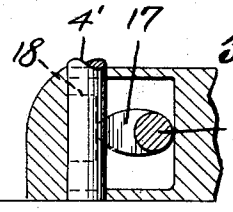


Fig. 8.



Fig. 9.



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DEVICE FOR CHANGING THE TONE OF THE STRING OF A MUSICAL INSTRUMENT

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Fig. 10.

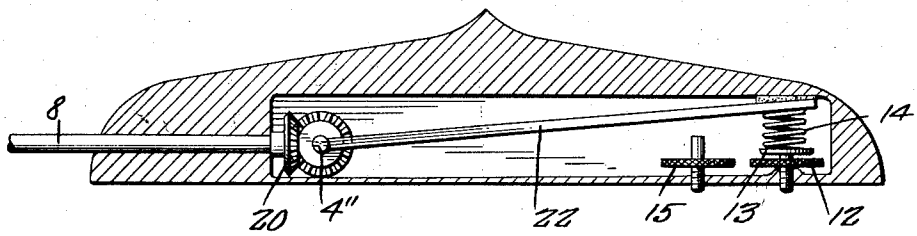


Fig. 11.

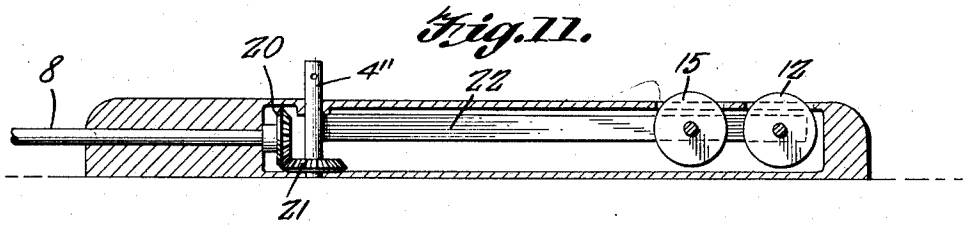
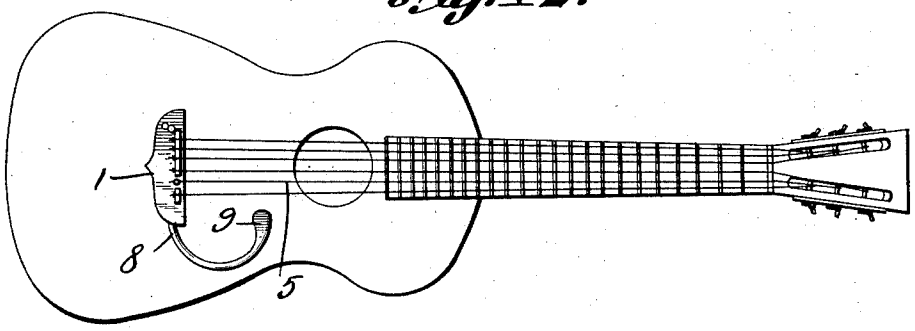


Fig. 12.



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UNITED STATES PATENT OFFICE

JOHN A. RYAN, OF PITTSBURGH, PENNSYLVANIA

DEVICE FOR CHANGING THE TONE OF THE STRING OF A MUSICAL INSTRUMENT

Application filed June 19, 1931. Serial No. 545,547.

This invention relates to a device adapted to be used for changing the tone of the string or strings of a musical instrument and it consists in the novel features hereinafter described and claimed.

The device is especially adapted to be used upon the Hawaiian steel guitar. This instrument is tuned in the major chords only and it is frequently impossible for a performer to produce minor chords without stopping the playing of a piece to retune the string. With the use of the device hereinafter described a performer will be able to change the tone of the strings while he is playing upon the instrument to produce complete minor chords. The device may be built in the bridge of the guitar or it may be incased within a block which may be positioned upon the body of the guitar below the bridge and the device includes a lever member which extends toward the string playing hand of the performer and which may be manipulated during the rendition of a number whereby the tune of the strings may be changed from major chords to minor chords and vice versa while the piece is being played.

In the accompanying drawings:—

Figure 1 is a front elevational view of a guitar showing one form of the device applied thereto.

Figure 2 is an enlarged horizontal sectional view of the device.

Figure 3 is a transverse sectional view of the device cut on the line 3—3 of Figure 2.

Figure 4 is a plan view of a modified form of the device showing parts broken away and parts in section.

Figure 5 is a longitudinal sectional view of the form shown in Figure 4.

Figure 6 is a transverse sectional view of a shaft used in the form as illustrated in Figures 4 and 5.

Figure 7 is a plan view of still another modified form of the device.

Figure 8 is a longitudinal sectional view of the form shown in Figure 7.

Figure 9 is an enlarged fragmentary sectional view of the form shown in Figures 7 and 8.

Figure 10 is a horizontal sectional view of still another modified form of the device.

Figure 11 is a longitudinal sectional view of the form shown in Figure 10.

Figure 12 is an elevational view of a guitar showing the form as illustrated in Figures 10 and 11 of the device applied thereto.

In the form as illustrated in Figures 1, 2 and 3 of the drawings the device consists of a casing 1 adapted to be mounted upon the body of the guitar 2 below the bridge 3 thereof. A pin 4 is mounted for turning movement in the casing 1 and the end portion of one of the strings 5 of the instrument is adapted to wind upon the pin 4. The pin 4 is provided with a worm wheel 6 which meshes with a worm 7 mounted upon a shaft 8 which in turn is journaled in the casing 1. A lever 9 is connected with the shaft 8 and extends around the end of the bridge 3 as shown in Figure 1 of the drawings and the end of the said lever is so disposed that pressure may be applied to the same by the hand of the performer who is striking the strings. The string 5 is the second string or the C sharp when the strings are tuned in a major chord. An arm 10 is fixed to the shaft 8 and located within the casing 1. A pad 11 is carried at the free end of the arm 10 and may bear against the surface of the body of the guitar or against the inner wall of the casing 1 to prevent noise when the arm 10 is moved. A screw 12 is threaded through the outer wall of the casing 1 and bears upon a disk 13 which in turn bears upon the upper end of a spring 14, the said spring resting at its lower end upon the free end portion of the arm 10. A second screw 15 is threaded through the outer wall of the casing 1 and its inner end is located in the path of movement of the arm 10 and the said screw 15 is adapted to limit the swinging movement of the arm 10.

The strings of the guitar are tuned to the usual major chords. If during the playing of a number the performer desires to strike a minor chord he places a finger of his right hand upon the free end of the lever 9 and depresses the same. Inasmuch as the lever 9 is connected with the shaft 8 having the worm

7 located thereon the said shaft and worm are turned whereby the worm wheel 6 turns the pin 4 and this changes the tone of the string 5 so that the set of strings of the guitar are changed in tune from a major chord to a minor chord. The screw 15 is first adjusted to limit the turning movement of the shaft 8 so that the string 5 may be changed to the proper tension. The arm 10 comes in contact with the inner end of the screw 15 and the spring 14 is compressed. When it is desired to change back to the major chord the performer removes pressure from the free end of the lever 9 and the spring 14 bearing upon the arm 10 returns the parts to normal position. By adjusting the screw 12 the spring 14 may be kept at proper tension. In the form of the invention as shown in Figures 4, 5 and 6 the pin 4 as hereinbefore described is dispensed with and in lieu thereof the shaft 8 is provided with a claw 16 which is adapted to engage a knot provided at the end of the string 5 and consequently the tension of the string 5 is changed as the claw 16 is swung around the axis of the shaft 8.

In the form of the invention as illustrated in Figures 7, 8 and 9 the shaft 8 is provided with a cam 17 adapted to engage against a lug 18 provided upon a pin 4′ and the string 5 is attached to the said pin so that the tension of the said string is changed when the shaft 8 turns so that the cam 17 strikes against the lug 18 and turns the pin.

In the form of the invention as shown in Figures 10, 11 and 12 the device is built into the bridge of the guitar. The shaft 8 carries a beveled pinion 20 which meshes with a similar pinion 21 carried at the lower end of a pin 4″. The string 5 is attached to the pin 4″. An arm 22 is housed within the bridge and attached to the pin 4″. The arm works against the pressure of a spring 14 which in turn is controlled by a disk 13 and screw 12 as hereinbefore described.

The various forms and parts hereinbefore described may be used as parts of the bridge of the instrument or separately and they may operate upon one or more strings and upon any string.

The device may be used upon Spanish guitars or similar as well as upon guitars of the Hawaiian type. The device is not necessarily limited to changing major chords to minor chords but may be used for forming 7th chords by adding two or more lever devices to the arrangement. The broad idea is to provide means for altering the tension upon the strings of the instrument while the strings are being played.

Having described the invention what is claimed is:

1. A device for changing the tone of the string of a musical instrument comprising a tone changing element adapted to be applied to the body of the instrument and adapted to be connected with the string, a lever member adapted to operate the tone changing element and adapted to be operated by the string playing hand of the performer while in playing position.

2. A device for changing the tone of the string of a musical instrument comprising a tone changing element adapted to be applied to the body of the instrument and adapted to be connected with the string, a lever member adapted to operate the tone changing element and adapted to be operated by the string playing hand of the performer while in playing position and means for returning the parts to normal position.

3. A device for changing the tone of the string of a musical instrument comprising a tone changing element adapted to be applied to the body of the instrument and adapted to be connected with the string, a lever member adapted to operate the tone changing element and adapted to be operated by the string playing hand of the performer while in playing position and means for regulating the movement of the tone changing element.

4. A device for changing the tone of the string of a musical instrument comprising a tone changing element adapted to be applied to the body of the instrument and adapted to be connected with the string, a lever member adapted to operate the tone changing element and adapted to be operated by the string playing hand of the performer while in string playing position, means for returning the parts to normal position and means for regulating the movement of the tone changing element.

5. A device for changing the tone of the string of a musical instrument comprising a shaft adapted to be applied to the body of the instrument, a lever member for the shaft, a string engaging member adapted to be operated by the shaft and a spring for returning the shaft to normal position.

6. A device for changing the tone of the string of a musical instrument comprising a shaft, adapted to be applied to the body of the instrument, a lever member connected with the shaft, means for regulating the turning movement of the shaft and spring means for returning the shaft to normal position.

In testimony whereof I affix my signature.

JOHN A. RYAN.