

[54] PITCH RAISING AND LOWERING DEVICE FOR GUITARS

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[51] Int. Cl.G10d 3/00

[58] Field of Search84/313, 312, 297 R, 319, 267, 84/314, 315

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[57] ABSTRACT

A pitch raising and lowering device which is unique in that, unlike prior art pitch changing devices, it is operatively mounted on the usual key-equipped string-end tuning head of the instrument. It comprises a rod having a thumb-actuated lever poised alongside the neck of the instrument (guitar or the like). This rod embodies a crank portion rockably mounted in a fixed bearing bracket. An arm of the crank carries and actuates a mechanical finger which has a terminal depressor which overlies one or more strings in a manner to optionally stress and release the same while the instrument is being played. When the lever is pressed the crank actuated mechanical finger progressively bends and tensions the string (or strings) and produces an ascending and diminishing glissando, that is, a sliding sound comparable to and obtainable only with a Hawaiian steel guitar.

8 Claims, 8 Drawing Figures

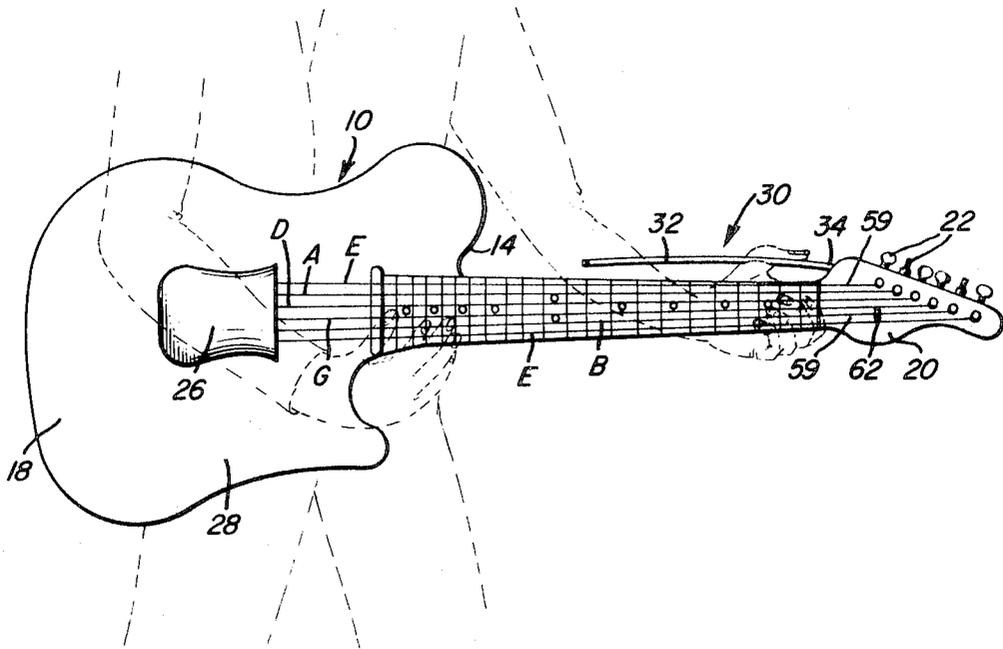


Fig. 5

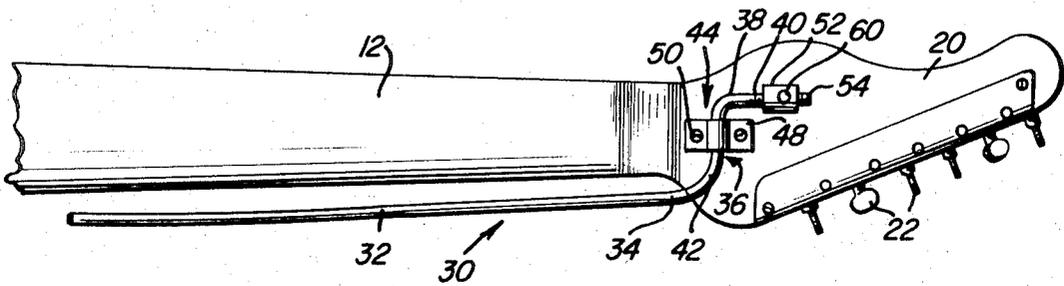


Fig. 6

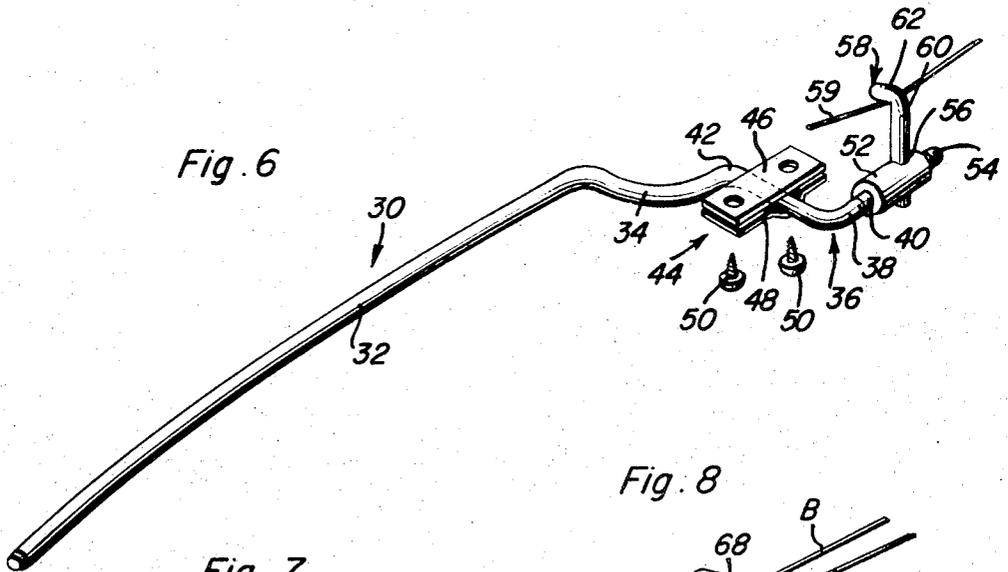


Fig. 7

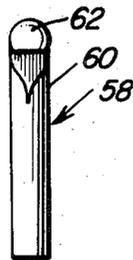
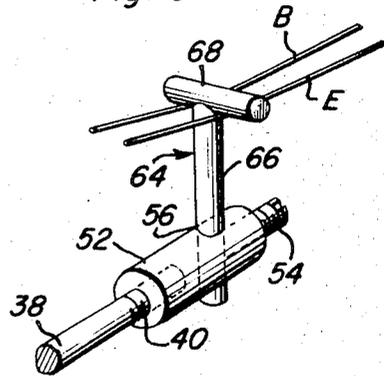


Fig. 8



PITCH RAISING AND LOWERING DEVICE FOR GUITARS

The present invention relates to an optionally usable pitch raising and lowering device which, while susceptible of feasible and practical use on many types of stringed musical instruments, is expressly designed and adapted for use on guitars and which is manually and controllably operable while the instrument is being fingered and played.

Persons conversant with the state of the art to which the invention relates are aware that pitch changing devices of one type or another have been devised and used by others to permit one to change the key rapidly. Other lever type devices, usually referred to as lever actuated vibrato devices, have also been adopted and are popularly used for desirable tremolo and vibrato effects. This aspect of the overall matter is mentioned here to stress the fact that the prior art adaptations herein under consideration are those which occupy a mounting locale between the regularly used bridge and the tailpiece, the trippable lever being arranged alongside the strings and bridge to render it accessible for quick depressing and releasing use.

For background purposes, and for general information, which ties in with the preceding paragraph, the reader, if so desired, may refer to the broadly applicable tone levers covered in a patent to Earl D. Porter, U.S. Pat. No. 3,250,167. As slightly more pertinent but nevertheless quite non-analogous to the herein disclosed adaptation, reference can be made to the vibrato appliance covered in the patent to Solon Boyd U.S. Pat. No. 3,142,221.

An object of the present invention is to advance the art through the medium of a readily applicable and removable attachment-type device, that is an adaptation which lends itself to acceptable and satisfactory use on the headed end of the fretted neck and which coordinates with the strained portions of the strings between the usual nut and string anchoring and tuning keys, commonly referred to as machine heads.

Briefly summarized, the herein disclosed concept has to do with a portable stringed musical instrument, for example, a guitar of one type or another, and which is characterized by either a solid or an acoustical body having forward and rearward end portions and a so-called front face, a neck having an inward end fixedly united with the forward end portion of an outward end portion of the body and terminating in the aforementioned head, usually, but not necessarily, slanted, as in Fender guitars. As usual, the neck is provided with a fretted fingerboard having a string seating nut fixedly embedded at the juncture of the fingerboard and coordinating head. The head is provided with individual operatively mounted machine heads. The customary bank of six vibratory strings (four in the case of a bass guitar) is provided with the strings anchored in any suitable manner at the tail end and secured at their forward or outer ends to the aforementioned machine heads or keys. The strings are strained over the nut and adjustably tensioned between the nut and the machine heads with which they are cooperatively connected. For simplification here, at least one mechanical string tensioning finger is operatively mounted on the head and has a portion engaging a coacting median portion of at least one of the associated strings in a manner to

stress and tension the same to selectively raise and lower the pitch of the string while the instrument is being chorded or otherwise fretted and played. Lever means is operatively mounted on fixture means fixed on the underneath side of the head. An operating connection is provided between the lever means and the mechanical finger to achieve the string depressing and releasing steps and, in doing so, to achieve the progressive pitch raising and lowering result.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIG. 1 is a view in front elevation showing a conventional guitar, illustrating how it is held while being played and showing the pitch raising and lowering device on the headed end (at the right) in this view.

FIG. 2 is a fragmentary elevational edge view which emphasizes the general construction and arrangement of the pitch raising and lowering device and shows how the components thereof are associated with the head and with the finger elevated to a released position above the second or B string.

FIG. 3 is a view similar to FIG. 2 with a portion broken away and showing the crank arm, adapter and mechanical finger pulled down when the lever is operated for purpose of tensioning the associated string and achieving the tone and pitch changing result.

FIG. 4 is a top plan view of the device appearing in FIGS. 2 and 3 in particular and with the left hand end portion of the rod or lever broken away.

FIG. 5 is a bottom plan view showing the underneath side of the neck and head and illustrating with particularity the lever, crank, fixture, adapter and other features.

FIG. 6 is a view in perspective which shows the ready-to-use attachment character of the device and which serves to emphasize that it lends itself to use on the head of the instrument requiring but a minimal alteration of the head.

FIG. 7 is an enlarged view of one type of mechanical string-tensioning finger which will be referred to later.

And FIG. 8 is a view in perspective on a suitably enlarged scale showing the adapter and the alternately usable mechanical finger, that is the T-shaped type wherein the cross-head bridges two strings to simultaneously act on the strings in a seemingly evident manner.

It should be reiterated, before describing the invention in detail, that by properly shaping and proportioning the component parts the invention can be used on other similarly headed stringer musical instruments. However, it will simplify the presentation by construing the invention as a ready-to-use attachment which lends itself to use on currently used portable acoustical and electric plectrum guitars.

With reference first to FIG. 1, the body of the guitar, which could be solid, hollow or acoustical in type is denoted by the numeral 10. The regularly constructed elongated neck is denoted at 12 and has an end attachable to the forward end portion 14 of the body. The top of the neck is provided as usual with a suitably

constructed fingerboard 15 provided with embedded frets 16. The butt or rearward end of the body is denoted at 18 and the head, angularly offset in this instance, is denoted at 20. The head is of appropriate contour and is provided with string anchoring or tuning keys commonly referred to as machine heads 22. Although the heads are shown as located along one edge they can be distributed otherwise (not shown). The numeral 24 designates the customary nut which is located at the juncture of the head and neck or fretted fingerboard as evident in FIGS. 1 to 4 inclusive. The strings, which can be of steel or nylon as the case may be stretched or strained over the fretted neck and have their rearward end portions appropriately attached to bridge means not shown in detail but encased in the shield 26 on the front face 28 of the instrument body. As usual, there are six strings (E-B-G-D-A-E) and these have been designated by letters to assist the reader in recognizing that the overall guitar is of customary construction in that the invention itself comprises a ready-to-use attachment as is illustrated in FIG. 6. This attachment is denoted, generally stated, by the numeral 30 and preferably, but not necessarily, comprises an elongated rod of suitable length and cross-section. The major portion of the rod is fashioned into and provides a manually controllable lever 32 which in practice is located alongside of a marginal edge of the neck as brought out in FIGS. 1 and 5 in particular. A forward end portion of the rod is offset as at 34 and is joined to a component part which is referred to generally as a crank 36. One arm of the crank is denoted at 38 and is screw-threaded at 40. The other arm of the crank constitutes a journal and is denoted at 42 and is mounted for angular rotation or oscillation in bearing means provided on a fixture 44. This fixture can and preferably does embody a cleat or first part 46 and a similar cover cleat or second part 48 which is bent between its ends to provide a bearing for the journal 42. Appropriate screw holes (shims too, if desired) are provided in a manner to permit the overall fixture to be bracketed in place with fastening screws 50. The forward end portion of the crank arm 38 is screw-threaded to accommodate a sleeve-like adapter 52, that is an adapter which has a screw-threaded socket to accommodate the screw threads. There is another screw provided here which is designated as a setscrew 54 and which screws into a screw-threaded bore provided therefor to coact with an opening 56 which is provided to accommodate the attachable shank or stem portion of the mechanical string tensioning finger 58, that is the finger which cooperates with the associated bendable portion 59 of the aforementioned vibratory string. Two mechanical fingers are here provided and they are interchangeable and can be fitted in the adapter as is evident. One mechanical finger, the one denoted at 58 is defined as L-shaped and comprises a leg or stem 60 which fits in the hole or socket 56 and is held by the setscrew 54 when the setscrew is tightened. The short limb or leg 62 is shaped as shown in FIGS. 6 and 7 to hook over the string 59 in the manner shown. This L-shaped string finger 58 is shown in FIG. 6 cooperating with a single string that is the B string. Whenever it is desired to obtain a plural action effect, it is within the purview of the invention to substitute or use the substantially T-shaped mechanical finger, that is the one which is

denoted at 64 in FIG. 8. Here the stem is designated at 66 and the crosshead at 68, the crosshead bridging the portions 59 of two strings E and B in the manner shown. The stem fits into the hole provided therefor in the adapter, that is the hole 56.

It should be pointed out here that although two string depressors or mechanical fingers are provided, one at 58 and the other one at 64, it would be within the purview of the inventive concept to use mechanical finger means to act on one string, two strings or all of the strings in an equivalent and seemingly self-evident manner.

It is submitted that the invention as herein constructed and utilized will assist the guitarist or other user in achieving effectually responsive supplemental effects not attainable from the use of the instruments now available on the market. It functions to please musicians who desire to achieve modernized techniques in that it offers added as well as distinctive tonal responsiveness. The added steel guitar glissando effect lends itself to innovated use in keeping with the skill and ingenuity of the performer.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.

What is claimed as new is as follows:

1. A portable stringed musical instrument, a guitar for example, comprising a body having forward and rearward end portions and a front face, a neck having an inward end fixedly united with said forward end portion and an outward end portion terminating in a head, said neck provided with a fretted fingerboard and having a string seating nut fixedly embedded at the juncture of said fingerboard and head, said head being provided with individual operatively mounted machine heads, a bank of vibratory strings anchored at corresponding ends atop said front face, strained over said nut and having variable terminal portions adjustably tensioned between said nut and the machine heads with which they are operatively connected, at least one mechanical string tensioning finger operatively mounted on said head and having a portion engaging a coating median portion of at least one of said strings whereby to stress and tension the same in a manner to selectively raise and lower the pitch of said string while the instrument is being chorded or otherwise fretted and played, lever means operatively mounted on said head, an operating connection between said lever means and mechanical finger, said head having an underneath side provided with a fixture embodying a bearing, said operating connection embodying a crank, said crank having a journal which is journaled in said bearing and also having a crank arm, said crank arm being provided with a coupling constituting an adapter, said finger being disposed at right angles to and detachably and adjustably connected with said adapter.

2. The stringed musical instrument defined in and according to claim 1, and wherein said finger is L-shaped in side elevation.

3. The stringed musical instrument defined in and according to claim 1, and wherein said finger is T-shaped in construction and provides a stem portion and a crosshead portion, the latter being capable of bridging over at least two strings in a manner to simultaneously act on and controllably depress and alternately release said strings.

4. For use on the key-equipped string anchoring head of a stringed musical instrument, a pitch raising and lowering device comprising a fixture which is adapted to be fixedly mounted on an underneath side of said head at a prescribed place, said fixture having a bearing, an elongated rod having a portion thereof fashioned into and providing a trippable thumb actuable lever, a forward end portion fashioned into and providing a crank, one portion of said crank constituting a rocker-type journal and the other portion providing an actuating arm, said journal being rockably journaled in said bearing, an adapter carried by a free end of said actuating arm, and a mechanical string depressing and releasing finger disposed at right angles to and operatively mounted on said adapter and having a string depressor which is designed and adapted to bridge over and operatively and releasably engage a predetermined portion of said string.

5. The stringed musical instrument defined in and according to claim 4, and wherein said finger is L-shaped in side elevation.

6. The stringed musical instrument defined in and according to claim 4, and wherein said finger is T-shaped in construction and provides a stem portion and a crosshead portion, the latter being capable of bridging over two strings in a manner to simultaneously act on and depress said strings.

7. The pitch raising and lowering device defined in and according to claim 4 and wherein said fixture comprises a pair of cleat-like brackets which are aligned and are separably fastened together and are assembled by fasteners which are securely connectible with said head.

8. The pitch raising and lowering device defined in and according to claim 4, and wherein said adapter comprises a sleeve-like coupling which is provided with a socket for insertable placement and retention of a coordinating end portion of said mechanical finger, and a setscrew operatively mounted in an end of said adapter, cooperable with said socket and adapted to clampingly bind and retain the end portion of said finger in said socket.

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