ADJUSTABLE BRIDGE FOR STRINGED MUSICAL INSTRUMENT

Filed May 18, 1970, Ser. No. 38,315
Int. Cl. G10d 3/04
U.S. Cl. 84—307

ABSTRACT OF THE DISCLOSURE

A bridge, such as for a guitar, includes a rigid base that has an elongated recess in which there is slidable supported a saddle which supports the guitar strings. As the saddle is adjusted vertically, it is guided by a guide surface within the recess to preclude any rocking or cocking.

BACKGROUND OF THE INVENTION

Field of the invention

This invention relates to a guitar construction, and more specifically to an adjustable bridge for a stringed musical instrument.

Prior art

When a wooden musical instrument such as a guitar is subjected to climate changes, particularly changes in humidity, the instrument changes physically owing to the many stresses that are present in a tuned string instrument. Where the climatic change constitute an increase in humidity, the spruce top of the body would tend to warp or swell upwardly, that is in a direction toward the strings. Further, there would be some neck movement under those circumstances. These natural changes alter the string tensions, but more importantly alter the spacing between the strings and the frets. If the spacing is too close, then a plucked string will rattle against the fret, and if the spacing is too great, then the musician must press down too far, which is both uncomfortable and which could be causing unintentional tensioning and hence sharpening. In an inexpensive guitar or similar musical instrument, nothing is done about the problem mentioned. As one gets to a more sophisticated guitar, there has in the past been provided a bridge which is adjustable in height so as to compensate for the instrument changes that are brought out by climatic changes.

Where the natural warpage has been significant or severe, the amount that the adjustable bridge must be moved could be considerable, and I have found that it has not been uncommon for the saddle of such bridge to cock or to rock slightly in a direction toward the fret board. While a cocked bridge saddle creates the appearance of poor workmanship, more significantly, it affects the information of the instrument. One illustration will suffice to dramatize this point. Assume that the scale length or speaking length of the string (the distance from the nut to the saddle) is 25.50 inches. Guitars are so constructed that the distance from the nut to the 12th fret is precisely one-half of the scale length or speaking length of the string. When a musician presses a string against the 12th fret, its length should be cut precisely in half so as to obtain a note one octave higher than the string is tuned for. Assume further that it has become necessary to raise the bridge saddle because of humidity changes. With the prior saddles where such raising is significant in amount, the saddle has cocked toward the frets, thereby decreasing the actual scale length or speaking length, whereby when the 12th fret is engaged, the note is no longer one octave higher, but slightly sharp as less than half of the speaking length is thus used. Thus, cocking of a bridge saddle affects the intonation of all of the strings no matter which fret is used.

SUMMARY OF THE INVENTION

According to my invention, there is provided an adjustable bridge that includes a base and a saddle wherein the base is provided with a support or guide surface against which the saddle is always engaged for any normal position thereof so that even though there is extreme adjustment of the saddle position, there is no rocking, and the basic original intonation of the instrument is preserved.

Accordingly, it is an object of the present invention to provide a bridge for a stringed musical instrument employing a saddle that cannot rock.

A further object of the present invention is to provide a bridge that can be adjusted to have no effect on the intonation of the stringed musical instrument.

A still further object of the present invention is to provide a stringed musical instrument construction that can be compensated in response to climatic conditions without adverse effect on the intonation.

Many other advantages, features and additional objects of the present invention will become manifest to those versed in the art upon making reference to the detailed description and the accompanying drawing in which a preferred structural embodiment incorporating the principles of the present invention is shown by way of illustrative example.

On the drawings:

FIG. 1 is a perspective view of a guitar provided with an adjustable bridge constructed in accordance with the principles of the present invention;
FIG. 2 is an enlarged plan view of the bridge portion of the guitar of FIG. 1;
FIG. 3 is a cross-sectional view taken along the line III—III of FIG. 2; and
FIG. 4 is an elevational view, partly broken away, of the bridge.

As shown on the drawing:

The principles of the present invention are particularly useful when embodied in a stringed musical instrument such as a guitar illustrated in FIG. 1, generally indicated by the numeral 10. The guitar 10 includes a body 11 which typically has a spruce top 12, a fret board 13 and a set of strings 14. At one end, the strings 14 are secured to the peg head, and each extends over a guitar nut 15, thence over the frets to a bridge 16.

The bridge 16 includes a base 17 and a saddle 18. The base 17 is rigid and is secured to the upper surface of the top 12. The base 17 has an elongated recess 19 within which the saddle 18 is disposed. As viewed in FIG. 2, the portion of the base 17 lying to the left of the string 14, and the portion of the base lying to the right of the string 14 is vertically enlarged, that is toward the viewer so that at the ends of the recess 19, the means or portion of the base that define such recess are thickened somewhat, as further seen best in FIG. 4. Owing to the tension of the strings 14, the saddle 18 tends to rock against one side of the recess 19, and advantage is taken of this fact so that the ends of the recess 19, and particularly the portions designated 20 and 21 constitute a guide surface. The guide surfaces 20 and 21 extend perpendicularly to the top 12 and have a vertical extent which is greater than the vertical extent of the adjacent or guided portion of the saddle, as best seen in FIG. 4. Thus, the recess 19 has effective portions at its opposite ends which provide snug guidance for the ends of the saddle 18.

The saddle 18 has a number of string support surfaces which are notched to receive and guide the individual strings 14. The upper surface of the saddle 18 may have a slight crown to it, and these surfaces 22 are normally
below the height of the upper end of the guide surfaces 20, 21 and are always below the upper end of the guide surfaces 20, 21 when the saddle is in its lowermost position. The saddle at its ends is thus in vertically sliding engagement with the base 17. The saddle 18 is cut away or tapered in a wedgelike manner at each of the string support surfaces 22, so while some guidance could possibly be provided at other portions of the recess 19, as the vertical extent of the outer wall of the saddle 18 is somewhat abbreviated at the string support surfaces 22, reliance is made for guidance on those portions of the saddle 18 that lie adjacent to the portions designated 20, 21, namely those portions of the recess that encircle the ends of the saddle in a snug manner.

The bridge further includes threaded means 23 shown in FIG. 3 for raising and for supporting the saddle 18. The threaded means 23 includes a threaded nut 24 and a threaded screw 25 for providing the adjustable support of the saddle. The screw 25 has a shoulder 26 on which the saddle 18 rests. The saddle 18 is apertured as at 27 in alignment with the screw 25 for reception of an adjusting tool. Further, the nut 24 is provided with a guide portion 28 which fits snugly in the saddle aperture 27 for augmenting the guidance of the end of the saddle 18, particularly if the saddle is raised so that it projects considerably from the upper end of the guide support surfaces 20, 21. Turning the screw 25 in one direction raises the saddle, and turning it in the opposite direction enables the strings 14 to force the saddle downwardly, maintaining its engagement on the shoulder 26. Normally however, when the saddle 18 is moved to its upper position, there will be adequate guidance by the guide surfaces 20, 21 to prevent any cocking of the saddle.

The spruce top 12 has an aperture 29 which is completely overlaid by the base 17 and the threaded means 23, and in particular the screw 25 thereof, extends through the aperture 29. A support means 30 is secured to the lower surface of the top 12 at the aperture 29 and is also recessed. The nut 24 is secured by a further nut 31 and washer 32 to the support means 30 in a fixed position, and the upper end of its threaded bore is chamfered to receive a lower beveled surface of the shoulder 26, therefore enabling the saddle 18 to be moved through the aperture 19, substantially in engagement with the upper flanged end of the nut 24. Each string 14 has a ball end 33 disposed in the aperture 29 and held therein by a slotted peg 34.

Although various minor modifications might be suggested by those versed in the art, it should be understood that I wish to embody within the scope of the patent warranted hereon all such embodiments as reasonably and properly come within the scope of my contribution to the art.

I claim as my invention:
1. A bridge for a stringed musical instrument, comprising:
   (a) a rigid base secured to said top in fixed position beneath said strings, said base having means defining an elongated recess extending transversely to said strings, said means including a guide surface extending perpendicularly to said top;
   (b) a saddle having string-supporting surfaces against which said strings are normally tensioned, said saddle being disposed in said recess in vertical sliding engagement with said guide surface, said guide surface having a vertical extent greater than the vertical extent of said saddle; and
   (c) threaded means supported by said top and having shoulder means adjustable supporting said saddle;
2. A bridge according to claim 1, in which said guide surface extends vertically higher than the adjacent string supporting surfaces on said saddle when said saddle is in a lower position.
3. A bridge according to claim 1, in which said guide surface has an effective portion at opposite ends of said saddle by which said saddle is snugly guided in said recess.
4. A bridge according to claim 1, in which the string supporting surfaces of said saddle are normally disposed vertically below the height of the upper end of said guide surface.
5. A bridge according to claim 1, in which said base is vertically enlarged at the ends of said recess to provide said guide surface.
6. A bridge according to claim 1, in which said threaded means includes:
   (a) a nut for being supported by the top of the instrument;
   (b) a screw threaded into said nut and having a shoulder engaging the lower side of said saddle; and
   (c) said saddle being apertured in alignment with said screw for receiving an adjusting tool.
7. A bridge according to claim 6, in which said screw has a guide portion fitting snugly in said saddle aperture.
8. In a stringed musical instrument having a body with a top, a fret board secured to said body, and a set of strings tensioned on said fret board, the improvement of an adjustable bridge which comprises:
   (a) a rigid base secured to said top in fixed position beneath said strings, said base having means defining an elongated recess extending transversely to said strings, said means including a guide surface extending perpendicularly to said top;
   (b) a saddle having string-supporting surfaces against which said strings are normally tensioned, said saddle being disposed in said recess in vertical sliding engagement with said guide surface, said guide surface having a vertical extent greater than the vertical extent of said saddle; and
   (c) threaded means supported by said top and having shoulder means adjustable supporting said saddle;
9. A stringed instrument according to claim 8 in which said top has an aperture overlaid by said base, said threaded means extending through said aperture, and support means carried by said top within said body and supporting said threaded means.
10. A stringed instrument according to claim 9 in which said saddle is movable partially into said aperture.

References Cited

UNITED STATES PATENTS

897,964 9/1908 De Julio 84—298
2,918,837 12/1959 Webster 84—312
2,972,923 2/1961 Fender 84—313

RICHARD B. WILKINSON, Primary Examiner
L. R. FRANKLIN, Assistant Examiner

U.S. Cl. X.R.

84—298, 291