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3,174,380

STRINGED INSTRUMENT BRIDGE AND ANCHORING MEANS

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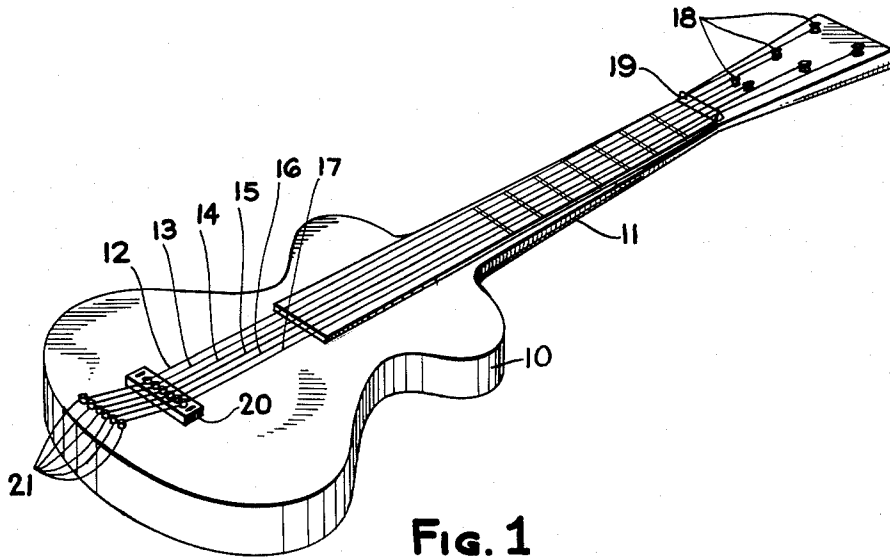


FIG. 1

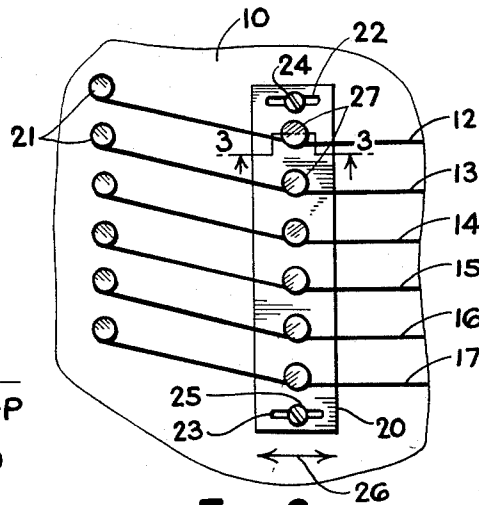


FIG. 2

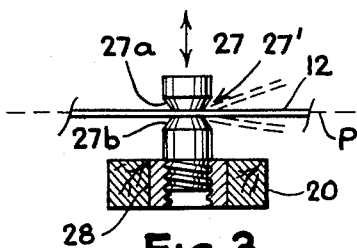


FIG. 3

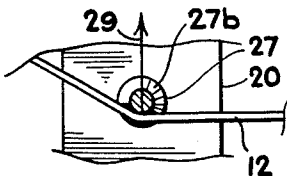


FIG. 4

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4 Claims. (Cl. 84—307)

This invention relates generally to stringed instruments and more particularly, to an improved string bridge and anchoring means for stringed instruments such as guitars.

Conventional guitar bridges pass beneath the guitar strings and are usually provided with small upwardly facing notches so that the strings are respectively cradled in the notches. The ends of the strings extending beyond the bridge are then anchored to the body of the guitar.

With bridge constructions of the foregoing type, plucking of the strings so that they vibrate generally in a vertical plane may result in the strings themselves actually moving in the bearing or notch in the bridge. In such event amplitude variations will result from different directions of picking. Further, vibrations in the string will exist between the bridge and anchoring means for the string and could result in spurious sounds and in the development of undesirable harmonics. Further, the bridge itself is often subject to movement relative to the body of the instrument which will result in undesirable sounds.

It would be preferable to provide a bridge support for the strings in which the holding force on each string is the same for upward and downward directions of string movement. Also it is desirable to have the bridge securely anchored to the body after positioning so as to be absolutely stationary with respect to the body at all times. In addition the height of each string should be individually adjustable without sacrificing rigidity. With such an arrangement, an end node for each string would be firmly established at the bearing point of engagement with the bridge. As a consequence, proper vibration of the string and thus improved fidelity in the sound reproduced by electrical means or in the actual acoustical sound generated in the air could be realized.

With the foregoing in mind, it is accordingly a primary object of this invention to provide an improved bridge and anchoring means for stringed instruments.

More particularly, it is an object to provide an improved string and anchoring means for guitar strings in which the holding force of the bridge on the string is substantially the same regardless of the upward or downward direction in which the string is caused to move.

Another object is to provide a bridge construction in which the position of the bridge along the body in the longitudinal direction of the strings may be varied and yet which bridge may be securely anchored to the body after such adjustment.

Still another object is to provide a bridge construction in which the height of each individual string above the body may be individually adjusted.

Briefly, these and other objects and advantages of this invention are attained by providing a bridge incorporating a plurality of individual bridge projections corresponding in number to the number of strings. These projections extend upwardly from the body of the guitar adjacent to the various strings respectively and to a level higher than the level of the strings. Suitable anchoring means are disposed behind the plurality of bridge projections and are laterally offset with respect to the longitudinal direction of the strings.

With the foregoing arrangement, and with the strings under tension and secured to the anchoring means, a side

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portion of each of the strings will be urged against a side portion of the corresponding projections. Each of the projections includes a cradling means in the form of a small V-shaped cavity or channel for receiving the strings. Preferably, the walls of these V-shaped cavities form equal angles with respect to a horizontal plane normal to the direction of the bridge projection and passing through the apex of the V so that a holding force on the string is exerted by each of the bridge projections that is substantially equal in both upward and downward directions. Prevention of lateral movement of the string from the cradle means is effected by the offset of the anchoring means to an extent sufficient so that the tension in the string will hold it firmly within the apex portion of the V-shaped cavities or channels.

With a construction of the foregoing type, the strings are properly held by the bridge with sufficient securement that a proper end node is established and improved quality in the sound will result.

A better understanding of the invention will be had by now referring to a preferred embodiment thereof as illustrated in the accompanying drawings, in which:

FIGURE 1 is a perspective view of a guitar incorporating the improved string bridge and anchoring means of the present invention;

FIGURE 2 is an enlarged fragmentary plan view of the bridge and anchoring means portion of the guitar of FIGURE 1;

FIGURE 3 is a fragmentary cross-section taken in the direction of the arrows 3—3 of FIGURE 2; and

FIGURE 4 is a cross-section in plan of the construction illustrated in FIGURE 3.

Referring first to FIGURE 1, there is shown a guitar body 10 and neck 11. A plurality of strings 12, 13, 14, 15, 16 and 17 are secured at their far ends to conventional tuning pegs 18. As shown, the strings pass over a nut 19 to the bridge 20 and anchoring means 21 of this invention.

Referring particularly to FIGURE 2, it will be noted that the bridge 20 is in the form of an elongated plate member running transversely beneath the strings and provided with end slots 22 and 23 receiving screws 24 and 25 respectively. With this arrangement, the screws 24 and 25 may be loosened and the bridge member 20 moved in a direction corresponding to the longitudinal direction of the main portion of the strings 12 through 17 as indicated by the double headed arrow 26. This adjustment enables the length of the vibrating portions of the strings to be varied.

The bridge 20 includes a plurality of upwardly extending bridge projections 27. The strings pass about side portions of the projections to the anchoring means 21. As shown, the anchoring means are offset in a lateral direction so that the various strings passing about the bridge projections 27 are angulated as viewed in FIGURE 2. The anchoring means extend to a level so that the end portions of the strings are secured in the same plane as the main portions of the strings. With this arrangement, the strings are all biased against the projections.

Since each of the projections 27 is identical, description of one will suffice for all. Thus, referring specifically to FIGURE 3, the projection 27 extends to a level higher than the string 12 and includes a cradling means in the form of a V-shaped cavity or channel 27' defined by sidewalls 27a and 27b. The acute angles formed by these walls with respect to a horizontal plane P normal to the projection and corresponding to the plane of the strings are equal. As a consequence, when the string 12 is plucked upwardly or downwardly, the holding force exerted by the cradling cavity will be the same. Thus, the string is prevented from moving at its point of con-

tact with the bridge projection 27 when plucked in an up and down direction.

Also each individual projection 27 is threaded into the plate 20 as at 28 so that the height of the string is individually adjustable by the extent of threading.

With reference now to FIGURE 4, it will be noted that a considerable force is exerted on the string against the projection 27 in the direction of the arrow 29. This force is the result of the lateral offsetting of the anchoring means 21 and the tension in the various strings. Thus, the string is securely fixed in engagement with the bridge projection so that it will remain in engagement even if plucked in a lateral direction.

In operation, the bridge plate member 20 is adjusted so that the strings in conjunction with the tuning pegs 18 are tuned and of a proper length. The screws 24 and 25 are then tightened to hold the plate member 20 securely to the body 10. Each of the respective strings 12 through 17 is received within its corresponding V-shaped cavity or channel in its corresponding projection 27.

As described in conjunction with FIGURES 3 and 4, it will be evident that plucking of the strings in any direction can be effected with properly established nodal points at the points of engagement of the strings with the cavities in the various bridge projections. The strings will be biased into the apex portions of the V-shaped cavities and thus their engaging points will be securely retained in stationary positions.

In the preferred embodiment of the invention, the sloping sides 27a and 27b defining the V-shaped cavity form angles of 45 degrees each with respect to the horizontal plane P. However, some latitude could be provided as long as the angles are acute with respect to the plane P.

The provision of a relatively wide flat plate for supporting the bridge projections with the screw securing means insures a very rigid and immovable bridge construction with respect to the guitar body.

From the foregoing description, it will be evident that the present invention has provided a greatly improved bridge and anchoring means for the strings of a stringed instrument. While the invention has been described in conjunction with a guitar, the bridge and anchoring construction clearly has application to any stringed instrument in which the strings can execute vibrations in different planes. Thus, while only one particular embodiment has been set forth and described, the invention is not to be thought of as limited to the particular example chosen for illustrative purposes.

What is claimed is:

1. A guitar string bridge and anchoring means comprising: a bridge member; means for securing said bridge member to the body portion of a guitar beneath the strings of said guitar; a plurality of bridge projections extending upwardly respectively adjacent to said strings from said bridge to a level higher than said strings, the number of said projections corresponding to the number of said strings and each projection including a laterally directed cradling means for receiving its corresponding string, said cradling means being defined by a V-shaped channel in the side of the projection, the sloping sides of said channel forming equal acute angles with respect to a horizontal plane normal to said projection, the open end of said V-shape channel receiving the string facing in a given direction; and a plurality of anchoring means for said strings respectively positioned behind said bridge on said body portion and laterally offset respectively from said projections in a direction opposite from said given direction such that tensioning of said strings biases them into their corresponding cradling means.

2. A guitar string bridge and anchoring means according to claim 1, in which each of said anchoring means secures its corresponding string at a point lying in said horizontal plane so that the holding force against upward and downward movement of said string by said cradling means is equal.

3. A guitar string bridge and anchoring means according to claim 1, in which said means for securing said bridge member is adjustable in the longitudinal direction of said strings for enabling the overall length of the vibrating portions of said strings to be varied.

4. A guitar string bridge and anchoring means according to claim 1, in which each of said bridge projections is threaded into said bridge member whereby the height of said strings above said bridge member may be individually varied.

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