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MUSICAL INSTRUMENT

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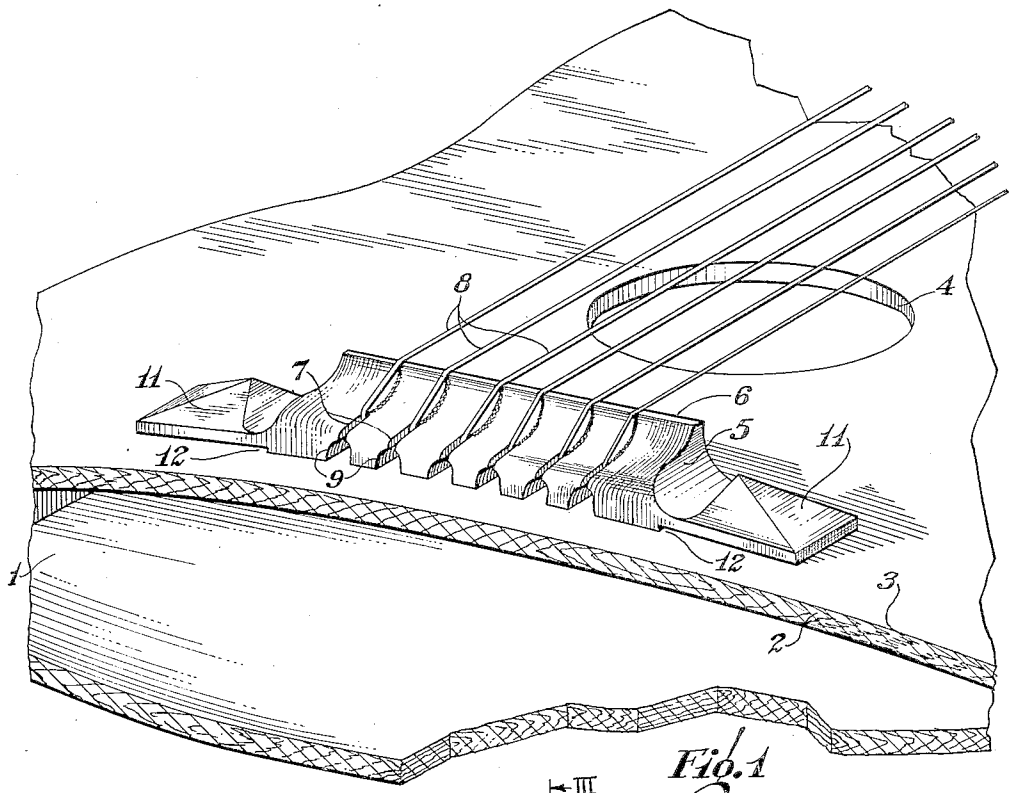


Fig. 1

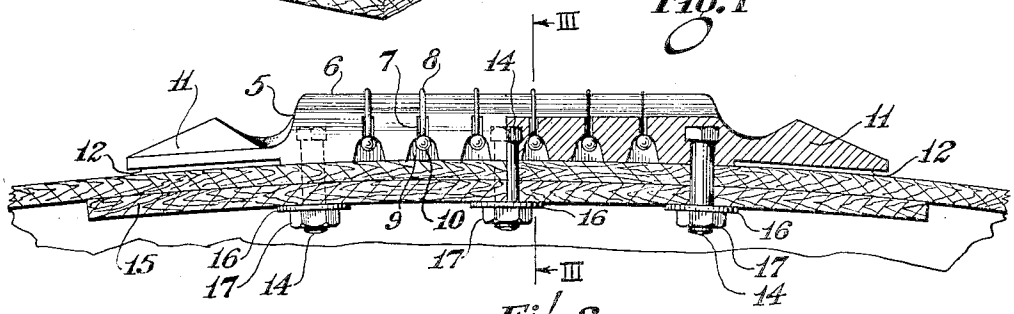


Fig. 2

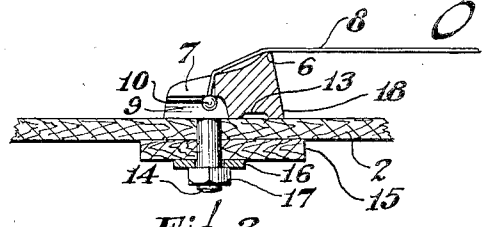


Fig. 3

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MUSICAL INSTRUMENT

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9 Claims. (Cl. 84—298)

This invention relates to musical instruments of the string type.

An object of the invention is to provide a musical instrument which will have improved tone quality.

Another object of the invention is to provide an improved musical instrument in which the strings may be firmly held.

Another object is to provide an improved musical instrument which may be easily constructed.

Another object is to provide an improved musical instrument which will be neat and attractive in appearance.

Another object is to provide an improved musical instrument which may be readily and economically manufactured.

Another object is to provide an improved musical instrument in which strings may be easily inserted or replaced.

Another object is to provide an improved musical instrument in which the strings may be firmly retained under relatively high tension.

Other objects will hereinafter appear.

The invention will be better understood from the description of one practical embodiment thereof illustrated in the accompanying drawing, in which;

Figure 1 is a fragmentary perspective view of the upper surface of a guitar embodying the invention;

Figure 2 is a view taken on the line II—II of Figure 1; and

Figure 3 is a sectional view taken on the line III—III of Figure 2.

While the invention is illustrated as applied to a guitar, it will be obvious that it might be applied to many other types of musical instruments, particularly those in which the body is provided with a wooden or like sounding board on its top, such for instance as the mandolin and ukulele.

In such instruments the body consists of a hollow wooden structure 1 having upon its upper surface a sounding board 2 which is a thin sheet of wood connected about its margin 3 to a shell. The sounding board is provided with an opening or sound hole 4 underlying the strings to permit the sound waves to enter the interior of the shell, which, acting as a resonating chamber, enriches the tone of the strings, this tone being further enriched by the vibration of the sounding board itself, acting as a kind of diaphragm. The strings pass over a bridge mounted upon the sounding board between the sound hole and the end of the body remote from the neck of the instrument, and are either secured to this bridge or by some means between it and the above mentioned end of the instrument.

Two common means of fastening these strings have been employed, in one of which the ends are attached to a fitting which is connected to the end of the body of the instrument, sometimes by the interposition of a tail piece similar to that used in the violin; and in the other of which the strings are attached to pegs or wedged in place just below the bridge. Sometimes they have been so attached to the bridge itself.

Bridges which have formerly been used generally have been constructed of wood and glued to the upper surface of the sounding board.

Holding means such as above described were satisfactory with the guitar when strung up in what is known as the "Spanish" fashion, which was mainly with strings of gut or similar relatively weak material, strained to relatively low tension.

With the advent of metal strings and higher pitches, such as are used when a guitar is strung up in the "Hawaiian" fashion, requiring greatly increased tension on the strings, the older types of holding devices have proved less satisfactory.

Wooden pegs, it is found, become worn by the vibration of these metal strings. Wooden bridges become split if the strings are attached to them, and the former method of gluing them to the sounding board is not sufficiently strong.

This has led to attempts to provide a more rigid structure, which, however, have impaired the ability of the sounding board to vibrate in accordance with the vibration of the strings, with a resultant impairment of the tone quality of the instrument.

When metallic parts have been put onto this portion of the sounding board, discordant tone qualities have been apparent.

We have found that it is possible by our invention to use metal bridges, not only without impairing the tone of the instrument, but actually enhancing it.

In the drawing, 2 indicates the sounding board of the instrument which is slightly convex and generally made of a relatively soft and light wood. Secured upon the surface of the sounding board is a bridge consisting of a central body portion 5 having a raised ridge 6 or fret extending along the rear edge or that nearest the neck of the instrument. The forward edge is provided with a plurality of narrow slots 7 through which the strings 8 may pass, these slots communicating with larger grooves or recesses 9 along the bottom of the bridge which are adapted to receive enlarged ends of the strings, such as a pivot or ball 10 affixed to each of them.

Formed integrally with the bridge are two laterally extending wings 11.

The bottom of the bridge is relieved beneath the wings as shown at 12 and also for a space extending from just immediately behind the grooves to just immediately forward the rear edge thereof as indicated at 13.

Three bolts or studs 14 are rigidly secured to the bridge, as by having their heads cast therein, and it will be noted are in substantial alignment with the inner ends of the slots 7 and as close to these slots as they can effectively be positioned. These bolts or studs extend through apertures in the sounding board, and through corresponding apertures in a reinforcing piece 15 secured to the underside of the sounding board, as indicated in Figures 2 and 3. This piece is of relatively hard but flexible material, such as veneer. The bolts are provided with washers 16 and nuts 17 by which the bridge is securely retained upon the sounding board of the device.

The lower surface of the bridge is curved to fit the upper surface of the sounding board, so induces no strain when clamped to it.

The bolts, being in alignment with the end of the strings, transmit any pull direct to the sounding board, and when the strings are caused to vibrate cause the board to vibrate in unison therewith, the bridge apparently acting somewhat as a bell crank lever, fulcrumed along its lower rear edge 18 and having force applied at the ridge 6 and transmitted through an arm defined by the string retaining slots to the bolts.

As the bolts are securely and rigidly connected at the bridge, there is no metallic harshness such as has been present in prior metal structures, and apparently the bridge does not in any way impair the vibration of the sounding board.

Preferably it is made of aluminum, so that its weight does not materially impair the vibration of the sounding board.

The nuts are readily applied to the bolts by hand and may be tightened by a socket wrench inserted through the sound hole and held in the hand of the operator.

While we have described the illustrated embodiment of our invention in some particularity, obviously many others will readily occur to those skilled in this art, and we do not, therefore, limit ourselves to the precise details shown and described but claim as our invention all embodiments, variations and modifications thereof coming within the scope of the appended claims.

We claim:

1. A bridge for musical instruments comprising a rigid bar having string engaging recesses, and threaded members rigidly and permanently secured to said bar and adapted to clamp the same upon a surface of a musical instrument.

2. A bridge for musical instruments comprising a rigid bar having string engaging recesses, and threaded members rigidly and permanently secured to said bar and adapted to clamp the same upon a surface of a musical instrument, said threaded members being positioned closely adjacent and in alignment with said recesses.

3. A bridge for musical instruments comprising a metal bar, a plurality of recesses formed in the underside thereof, a plurality of slots extending from said recesses to the top of said bar adjacent one edge of the latter, a ridge adjacent the opposite edge of the bar, and securing means associated with said bar in substantial alignment with said slots.

4. A bridge for musical instruments comprising a metal bar, a plurality of recesses formed in the underside thereof, a plurality of slots extending from said recesses to the top of said bar adjacent one edge of the latter, a ridge adjacent the opposite edge of the bar, securing means associated with said bar in substantial alignment with said slots, and wings extending from the ends of and integral with said bar.

5. In a musical instrument comprising a sounding board and string holding and tensioning means, the combination of a reinforcing piece on one side of the sounding board, an integral metal bridge on the other side of said sounding board, securing means clamping said bridge to said reinforcing piece, said bridge extending beyond the securing means and being spaced from the sounding board from its ends to adjacent said securing means.

6. In a musical instrument comprising a sounding board and string holding and tensioning means, the combination of a flat reinforcing piece on one side of the sounding board, an integral metal bridge on the other side thereof having a ridge along one edge and a plurality of recesses and slots along another edge, said slots communicating with said recesses adapted to hold the ends of the strings, bolts rigidly connected to and extending from said bridge through said sounding board and reinforcing piece, and nuts threaded on the bolts clamping the bridge to the sounding board.

7. In a musical instrument comprising a sounding board and string holding and tensioning means, the combination of a flat reinforcing piece on one side of the sounding board, an integral metal bridge on the other side thereof having a ridge along one edge and a plurality of recesses and slots along another edge, said slots communicating with said recesses adapted to hold the ends of the strings, bolts extending from said bridge through said sounding board and reinforcing piece, nuts threaded on the bolts and clamping the bridge to the sounding board, said bolts being in substantial alignment with the inner ends of said slots.

8. In a musical instrument comprising a sounding board and string holding and tensioning means, the combination of a flat reinforcing piece on one side of the sounding board, an integral metal bridge on the other side thereof having a ridge along one edge and a plurality of recesses and slots along another edge, said slots communicating with said recesses adapted to hold the ends of the strings, bolts extending from said bridge through said sounding board and reinforcing piece, nuts threaded on the bolts and clamping the bridge to the sounding board, said bolts being in substantial alignment with the inner ends of said slots, and wings integral with and extending from the ends of said bridge.

9. In a musical instrument comprising a sounding board and string holding and tensioning means, the combination of a flat reinforcing piece on one side of the sounding board, an integral metal bridge on the other side thereof having a ridge along one edge and a plurality of recesses and slots along another edge, said slots communicating with said recesses adapted to hold the ends of the string, bolts extending from said bridge through said sounding board and reinforcing piece, nuts threaded on the bolts and clamping the bridge to the sounding board, said bolts being in substantial alignment with the inner ends of said slots, and wings extending from the ends of said bridge and integral therewith, the bridge being spaced from said sounding board beneath said wings and between said recesses and the edge under said ridge.

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