

April 29, 1969

T. M. McCARTY

3,440,921

BRIDGE FOR STRINGED MUSICAL INSTRUMENTS

Filed Oct. 25, 1967

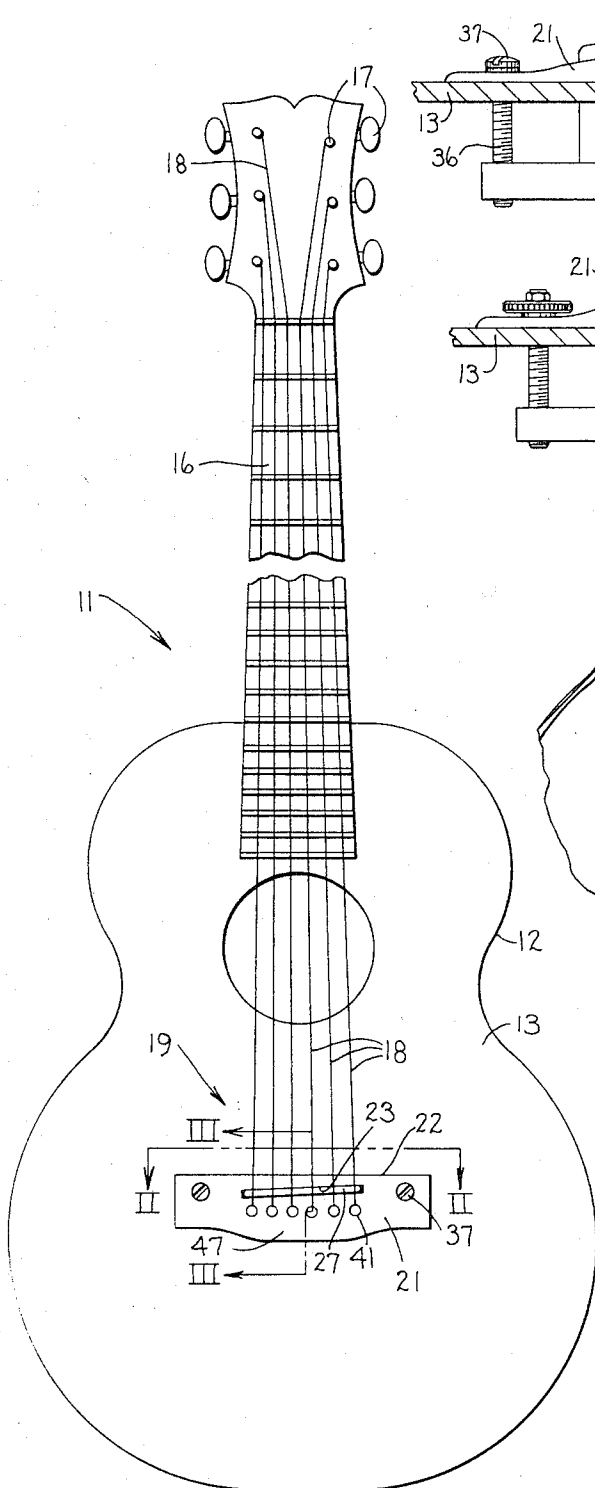
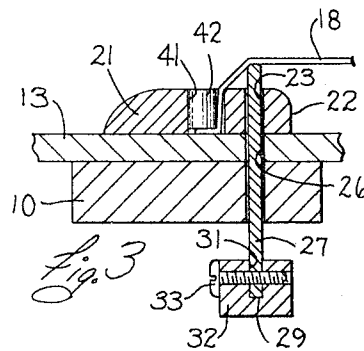
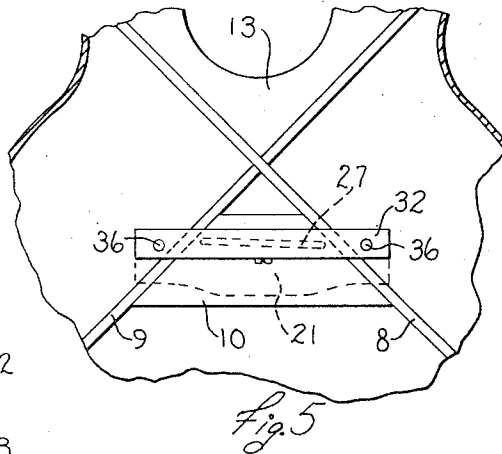
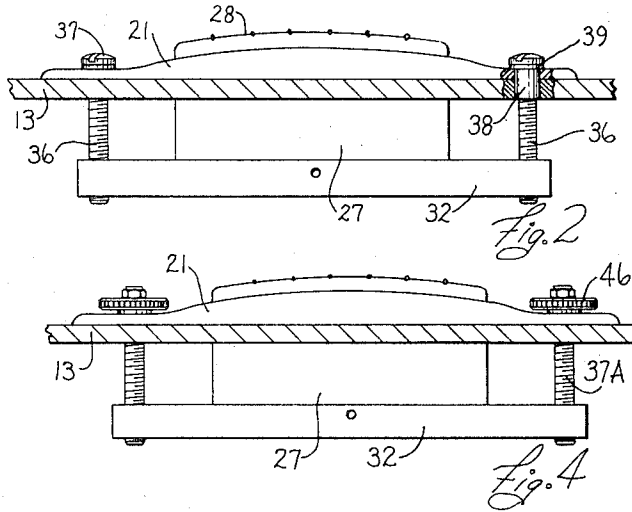


Fig. 1



INVENTOR.
THEODORE M. McCARTY
BY
Woodhams, Blanchard & Flynn
ATTORNEYS

1

2

3,440,921
BRIDGE FOR STRINGED MUSICAL INSTRUMENTS
Theodore M. McCarty, Kalamazoo, Mich., assignor to
Bigsby Accessories, Inc., Kalamazoo, Mich., a corpo-
ration of Michigan
Filed Oct. 25, 1967, Ser. No. 678,119
Int. Cl. G10d 3/04
U.S. Cl. 84—307

10 Claims

ABSTRACT OF THE DISCLOSURE

An adjustable bridge assembly for a stringed musical instrument whereby the saddle member thereof can be raised or lowered relative to the sounding board as desired. The saddle member is seated within a slot provided in a sounding bar positioned within the hollow body of the musical instrument. The saddle member extends outwardly through a further slot provided in the sounding board and projects above the surface thereof for supporting the strings. The sounding bar is connected to the sounding board by adjustable fastening means, such as screws, for permitting the sounding bar and saddle member thereon to be raised or lowered.

Field of the invention

This invention relates to a bridge for a stringed musical instrument and, in particular relates to a bridge assembly which permits the position of the saddle portion thereof to be easily adjusted relative to the sounding board of the instrument.

Description of the prior art

In stringed musical instruments, the position or height of the bridge relative to the surface of the sounding board of the instrument is a critical limitation. For example, if the bridge is positioned too high with respect to the sounding board, then the strings of the instrument are excessively spaced from the neck portion of the instrument and, accordingly, the user of the instrument finds it difficult to play the instrument due to the difficulty in tightly gripping the strings between the fingers and the neck portion. On the other hand, if the bridge is too low, then the strings contact or vibrate against the neck of the instrument when played, thus producing a harsh and unpleasant noise instead of, or in addition to, a musical tone. Accordingly, it is desirable to position the bridge as low as possible relative to the sounding board so as to facilitate playing of the instrument, while at the same time maintaining sufficient space between the strings and the instrument to insure that same will not vibrate against the instrument.

In most stringed instruments, the bridge includes a saddle member which is normally fixed within a blind groove formed in the surface of the sounding board or in the surface of a base member mounted on the sounding board. However, this type of mounting arrangement has proved undesirable since, when the weather is hot and humid, the sounding board swells and thus causes a greater separation or distance between the strings and the instrument, thereby making playing of the instrument more difficult. Thus, it is often necessary to sand down the surface of the saddle to maintain the proper spacing between the strings and the instrument. However, when the weather then becomes cold and dry, the sounding board shrinks and causes the strings to be positioned too close to the instrument whereby same vibrate against the instrument during playing. Since the saddle has been previously sanded down, it is now necessary to remove the old saddle and replace same with a new saddle so as to obtain the desired spaced between the strings and the instrument. While this procedure has been effective, such sanding and re-

placing of the saddle is not only costly, but unnecessarily time consuming.

Accordingly, it has been suggested that the saddle be adjustably mounted on the stringed instrument so as to permit adjustment of the position thereof according to the climatic seasons and environmental conditions. While several different adjustable bridge assemblies have been proposed, none of these devices have proven highly successful since they have either been fairly complex and expensive to manufacture, or have adversely affected the tonal quality of the instrument.

Accordingly, it is an object of this invention to provide:

(1) An adjustable bridge assembly for a stringed musical instrument.

(2) An adjustable bridge assembly, as aforesaid, which permits the position of the bridge to be quickly and easily adjusted relative to the sound board of the instrument.

(3) An adjustable bridge assembly, as aforesaid, which does not destroy or adversely affect the tonal quality of the instrument.

(4) An adjustable bridge assembly, as aforesaid, which utilizes a metallic sounding bar positioned within the body of the instrument.

(5) An adjustable bridge assembly, as aforesaid, which is highly effective to support and anchor the strings of the instrument and at the same time is compact and attractive.

(6) An adjustable bridge assembly, as aforesaid, which is economical to manufacture and simple to mount on a stringed instrument.

Other objects and purposes of this invention will be apparent to persons acquainted with apparatus of this general type upon reading the following specification and inspecting the accompanying drawings.

Brief description of the drawings

FIGURE 1 is a plan view of a guitar embodying the present invention, the neck of the guitar being partially broken away.

FIGURE 2 is an enlarged fragmentary sectional view, partially broken away, as taken on the line II—II of FIGURE 1.

FIGURE 3 is an enlarged fragmentary sectional view as taken on the line III—III of FIGURE 1.

FIGURE 4 is an enlarged fragmentary view, partially in cross section, illustrating a modification of the present invention.

FIGURE 5 is a fragmentary view from the underside of the sound board of the instrument.

Certain terminology will be used in the following description for convenience in reference only and will not be limiting. The words "upwardly," "downwardly," "rightwardly" and "leftwardly" will designate directions in the drawings to which reference is made. The words "inwardly" and "outwardly" will refer to directions toward and away from, respectively, the geometric center of the device and designated parts thereof. Said terminology will include the words above specifically mentioned, derivatives thereof and words of similar import.

Summary of the invention

In general, the objects and purposes of the invention are met by providing an adjustable bridge assembly having a base member which is secured to the surface of the sounding board of a musical instrument. The base member and the sounding board are provided with a slot which extends into the interior of the hollow body forming the musical instrument. A saddle member is slideably positioned within the slot and has one end thereof extending upwardly above the base member so as to contact and support the strings of the instrument thereon. The other

end of the saddle member is received within a groove formed in a sounding bar positioned in the interior of the musical instrument. The opposite ends of the sounding bar are connected to the base member by means of a pair of adjustable fastening elements, such as screws, whereby rotation of one or both of the screws permits the sounding bar and the saddle carried thereon to be raised or lowered relative to the sounding board for adjusting the height of the strings relative to the body of the instrument.

Detailed description

In the accompanying drawings, FIGURE 1 illustrates a conventional stringed instrument 11, such as a guitar, which instrument is of conventional construction and comprises a hollow body 12 having a sounding board 13 thereon. Reinforcing ribs 8 and 9 and a bridge supporting block 10 are provided in a conventional manner to the underside of the sounding board 13. A neck 16 is connected to the body 12, the neck having conventional transverse frets extending thereacross. The neck is provided with conventional tuning pins 71 on the end thereof to which is connected one end of the strings 18, the other end of the strings being anchored or connected to the adjustable bridge assembly 19.

The adjustable bridge assembly 19 comprises a base member 21 formed of wood or other suitable material and preferably secured to the sounding board 13 by means of glue or other adhesive. The front edge 22 of the base member is in this embodiment substantially transverse to the longitudinal axes of the strings. The base member is provided with a longitudinally extending slot 23 therein, which slot is slightly inclined relative to the front edge 22 of the base member to vary the length of the different strings in relation to their diameter in a manner and for purposes which are already well known. A similar slot 26 is formed in the sounding board 13 and support block 10 such that, when the base member is secured to the sounding board, the slots 23 and 26 are positioned one above the other so as to form a substantially continuous slot extending into the interior of the body 12 as illustrated in FIGURE 3. A saddle member 27 is slideably received within the slots 23 and 26 and positioned between the ribs 8 and 9 with the upper edge 28 of the saddle member extending beyond the upper surface of the base member 21. The lower edge 29 of the saddle member projects below the ribs 8 and 9 and is received within a groove 31 formed in a sounding bar 32 located within the interior of the body 12 and below the ribs 8 and 9. The bridge member 27 is desirably fixed to the sounding bar 32 by means of a screw member 33.

The sounding bar 32 is suspended within the interior of the body 12 by means of a pair of adjustable fastening elements, such as screws 36 as illustrated in FIGURE 2. In this embodiment the ribs 8 and 9 extend between the saddle and respective screws 36. Each of the screws 36 is, in this embodiment, provided with a conventional slotted head 37 at the upper end thereof which is positioned adjacent the upper surface of the base member 21. The lower ends of the screws 36 are each threadedly engaged with the sounding bar 32 adjacent opposite ends thereof. The base member 21 and the sounding board 13 are each provided with coaxially aligned openings therein in which is received a cylindrical bushing 38, which bushing has a flange or shoulder 39 at the upper end thereof in bearing engagement with the upper surface of the base member 21. The bushings 38 thus permit the screw members 36 to slideably move relative to the base plate 21 and the sounding board 13.

The base member 21 is further provided with a plurality of holes 41 therein spaced longitudinally of the bridge member. The strings 18 pass over the upper edge 28 of the saddle member 27 (FIGURE 3) with the extreme end of each string being disposed within one of the holes 41 and secured therein by means of a wedging pin 42 or similar device. If desired, the upper edge 28

of the saddle can be provided with string notches therein for maintaining the desired transverse spacing between said strings.

The contact of the strings on the upper edge 28 of the saddle, combined with the tension which exists within the strings, causes a downward or pushing force to be exerted on the saddle. The force exerted on the saddle member 27 is transmitted to the sounding bar 32 which in turn imposes a tensile force on the screws 36 whereby said screws are pulled downwardly causing the heads 37 thereof to be maintained in snug bearing engagement with the flanges 39 formed on the bushings 38. Thus, the tension which exists in the strings maintains the adjustable bridge assembly in the desired adjusted position and thus the screw members 36 can be freely slideably received within the bushings 38.

The sounding bar 32 is preferably constructed of aluminum so as to permit a clear and undistorted transmission of sound therethrough. However, other suitable metallic materials could be utilized, the only requirement being that the material be hard enough, as is already well known in the art, to transmit sound therethrough while being soft enough so as to not generate a ringing sound. The saddle member 27 is preferably constructed of any reasonably hard and stiff plastic which can be easily and inexpensively manufactured.

Operation

Although the operation of the device embodying the invention has been indicated somewhat above, said operation will be described in detail hereinbelow for a better understanding of the invention.

When it is desired to adjust the height of the bridge member 19 with respect to the base member 21, said adjustment can be easily accomplished merely by rotating the threaded screw members 36 by means of a conventional tool, such as a screwdriver or coin. Rotation of both of the screw members 36 will cause the sounding bar 32 to be either raised or lowered relative to the sounding board 13 depending upon the direction of screw rotation. This in turn will cause the saddle member 27 to be correspondingly raised or lowered relative to the upper surface of the base member 21, thereby adjusting the clearance which exists between the strings 18 and the body of the instrument. If it is desired to adjust the height of only one end of the saddle member, same can be accomplished merely by rotating the screw positioned adjacent that end so as to cause a raising or lowering of the saddle member. Since the differential adjustment in the height of one end of the saddle member relative to the other end is of a very small magnitude, no binding of the saddle member will occur due to the fact that sufficient clearance is provided between the screw members 36 and the surrounding sleeve bearings 38 for accommodating such slight angularities.

FIGURE 4 illustrates a modification of the present invention wherein the threaded screw members 36 having conventional slotted heads 37 thereon are replaced by threaded members 37A having knurled wheels 46 fixedly secured adjacent the upper ends thereof. The screw members 37A coact with the overall assembly in substantially the same manner as the screw members 37, that is, the lower end of the screw members 37A threadedly engaged the sounding bar 32 adjacent opposite ends thereof while the lower surface of the knurled wheels 46 are held in bearing engagement with the flange 39 of the bearing sleeve 38. However, in some situations, the threaded screw member 37A having the knurled wheels 46 thereon are desirable since same permit the saddle height to be adjusted merely by gripping the knurled wheels between the thumb and forefinger and rotating the screw members in the desired direction until the desired height is achieved. Thus, this modification does not require the use of a special tool, such as a screw driver, for adjusting the height of the saddle member.

A still further modification of the invention resides in the position of the base member 21 with respect to the body 12 of the instrument. As illustrated in FIGURE 1, the base member is provided with a portion 47 which extends outwardly in a direction away from the neck 16 of the instrument. However, if desired, the base member 21 could be rotated 180 degrees within the plane of the sounding board 13 whereby the extending portion 47 would then extend in a direction toward the neck 16. This structure will in some cases be desirable since the large extending portion 47 provides an increased support tending to prevent twisting or tipping of the base member 21 due to the moment imposed thereon by the tension within the strings.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. An adjustable bridge assembly for a stringed musical instrument having a sounding board, comprising:
 - a base member having a first surface thereon adapted to be mounted on the sounding board of such instrument, said base member having a slot extending through said member and extending through said sounding board;
 - a sounding bar spaced from said base member and positioned on the side thereof facing said surface;
 - adjustable fastening means extending through said surface and interconnecting said sounding bar and said base member for permitting adjustment in the spacing therebetween; and
 - a saddle member slideably received within and extending through said slot and bearing against said sounding bar.
2. An adjustable bridge assembly as defined in claim 1, wherein:
 - said fastening means includes a threaded member having one end thereof threadedly received within one of said sounding bar and said base member, the other end of said threaded member being provided with an enlarged head thereon with said head being in bearing engagement with the other of said sounding bar and said base member.
3. An adjustable bridge assembly as defined in claim 1, wherein:
 - said base member is provided with a hole substantially adjacent each end of said slot;
 - said fastening means comprising a pair of threaded members with one end of each of said threaded members being slideably received within one of said holes, the other end of each of said threaded members being threadedly engaged with said sounding bar adjacent opposite ends thereof.
4. An adjustable bridge assembly as defined in claim 3, wherein:
 - said threaded members are provided with enlarged head portions on the said one end thereof, said head portions being positioned on the side of said base member opposite said sounding bar.
5. An adjustable bridge assembly as defined in claim 1, wherein:
 - said sounding bar is provided with a longitudinally extending groove therein, one edge of said saddle member being received within said groove.

6. An adjustable bridge assembly as defined in claim 1, wherein:
 - said sounding bar is constructed of aluminum.
7. An adjustable bridge assembly as defined in claim 1, wherein:
 - said base member is provided with a pair of openings extending therethrough substantially adjacent the opposite ends of said slot;
 - said fastening means comprising a pair of threaded members with one end of each of said members being slideably received within said openings, the other end of each of said threaded members being threadedly engaged with said sounding bar adjacent opposite ends thereof;
 - said threaded members being additionally provided with enlarged head portions adjacent said one end thereof, said head portions being positioned adjacent said base member on the side thereof opposite said sounding bar;
 - said sounding bar having a groove formed in one surface thereof with said groove being substantially parallel to the slot formed in said base member;
 - said saddle member extending into and through said slot and having one edge thereof received within the groove formed in said sounding bar, whereby the opposite edge thereof is positioned adjacent the opposite side of said base member.
8. An adjustable bridge assembly as defined in claim 7, wherein:
 - said enlarged head portion is provided with gripping means thereon for permitting rotation of said threaded member.
9. An adjustable bridge assembly as defined in claim 7, wherein:
 - lock means are provided for interconnecting said saddle member to said sounding bar.
10. An adjustable bridge assembly for a stringed musical instrument having a sounding board with reinforcing means on the inner side thereof, comprising:
 - a base member having a first surface thereon adapted to be mounted on the sounding board of such instrument, said base member having a slot extending through said member, and a further slot in register with said last-named slot extending through said sounding board;
 - a sounding bar spaced from said one surface and positioned on the opposite side of both said sounding board and said reinforcing means from said base member;
 - adjustable fastening means extending through said surface and interconnecting said sounding bar and said base member for permitting adjustment in the spacing therebetween; and
 - a saddle member slideably received within and extending through said slot and engaging said sounding bar.

References Cited

UNITED STATES PATENTS

2,025,875	12/1935	Loar	84—1
2,905,042	9/1959	Hoyer	84—307

RICHARD B. WILKINSON, *Primary Examiner*.

GARY M. POLUMBUS, *Assistant Examiner*.