US011404033B1

(12) **United States Patent**
Bergin

(10) **Patent No.: US 11,404,033 B1**
(45) **Date of Patent: Aug. 2, 2022**

(54) **SUPPLEMENTAL COMPENSATING SADDLE FOR CLASSICAL GUITAR**

(71) Applicant: **Thomas Bergin**, Leawood, KS (US)

(72) Inventor: **Thomas Bergin**, Leawood, KS (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **17/243,905**

(22) Filed: **Apr. 29, 2021**

(51) **Int. Cl.**
G10D 3/12 (2020.01)
G10D 1/08 (2006.01)

(52) **U.S. Cl.**
CPC ***G10D 3/12*** (2013.01); ***G10D 1/08*** (2013.01)

(58) **Field of Classification Search**
CPC .. G10D 3/12; G10D 3/00; G10D 1/08; G10D 1/00
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,208,941	A	6/1980	Wechter	
4,625,613	A	12/1986	Steinberger	
5,295,427	A	3/1994	Johnsen	
5,600,078	A	2/1997	Edwards	
5,705,760	A	1/1998	Rose	
7,563,968	B2	7/2009	Medas	
8,940,986	B1	1/2015	Edwards	
9,899,008	B1	2/2018	Williams	
10,497,342	B2	12/2019	Oberg	
11,074,893	B1 *	7/2021	Zorich	G10D 3/12

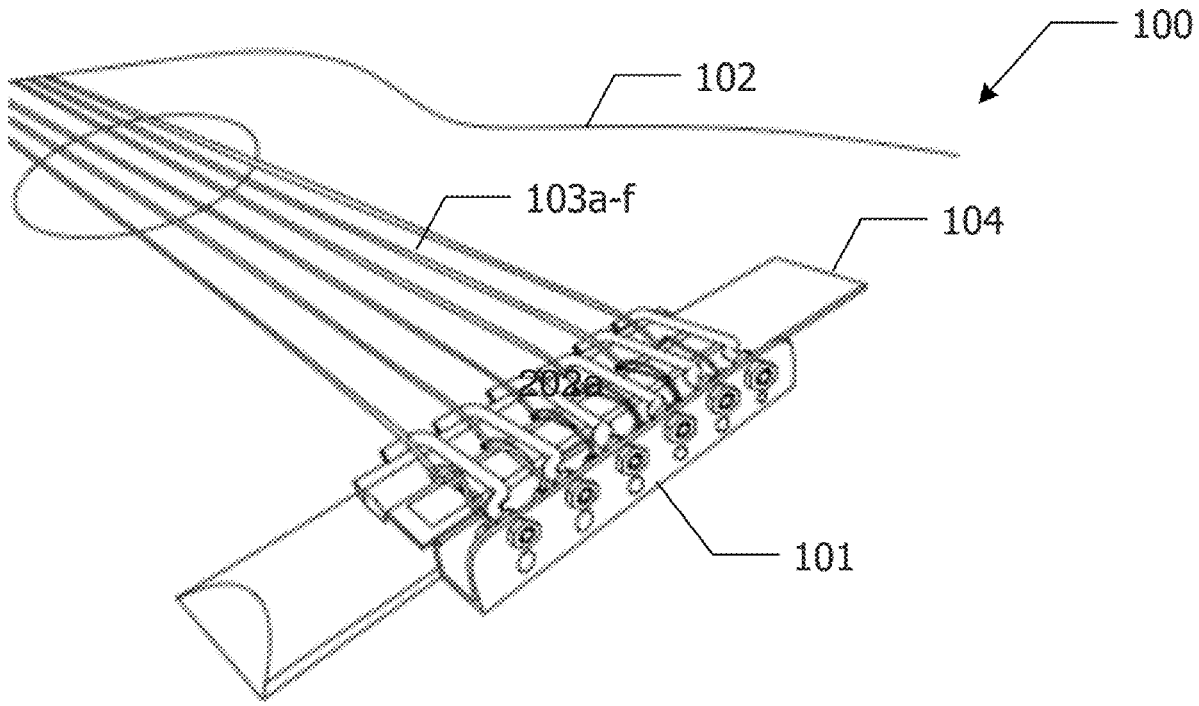
* cited by examiner

Primary Examiner — Kimberly R Lockett
(74) *Attorney, Agent, or Firm* — Volte Law Group

(57) **ABSTRACT**

An article of manufacture for providing a supplemental compensating saddle used with a classical guitar having a head, a neck, a sound board, a bridge, a saddle, and a set of strings running from the head to the bridge. The supplemental compensating saddle includes a mounting bracket having a higher rear vertical member and a lower front vertical member coupled together, the mounting bracket being mounted behind the bridge, a set of node assemblies coupled to the higher rear vertical member and extending across the bridge and under the set of strings, each of the node assemblies supporting a corresponding string within the set of strings, and a set of adjustable securing mechanisms coupling each of the node assemblies to the higher rear member of the mounting bracket, each adjustable securing mechanism enables each corresponding node assembly to move parallel to a path of the corresponding string within the set of strings.

8 Claims, 4 Drawing Sheets



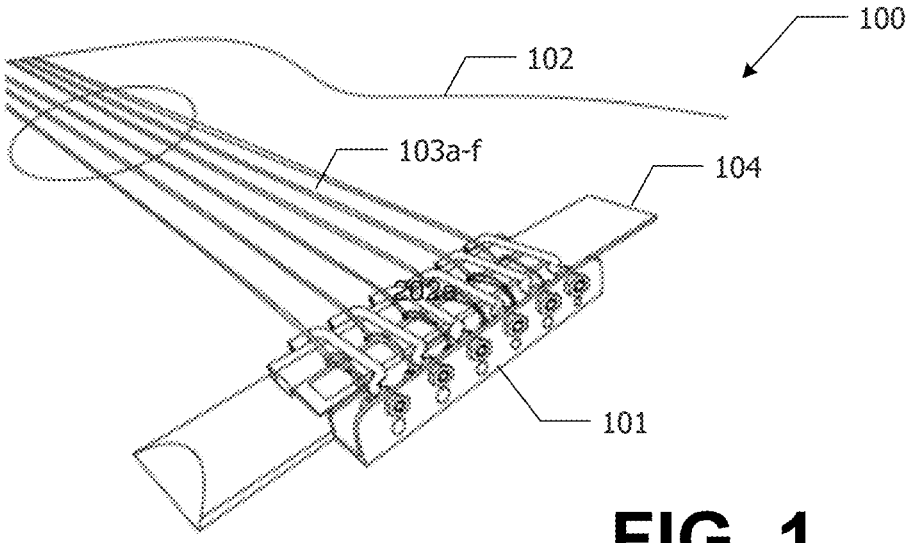

100
102
103a-f
104
202a
101

FIG. 1

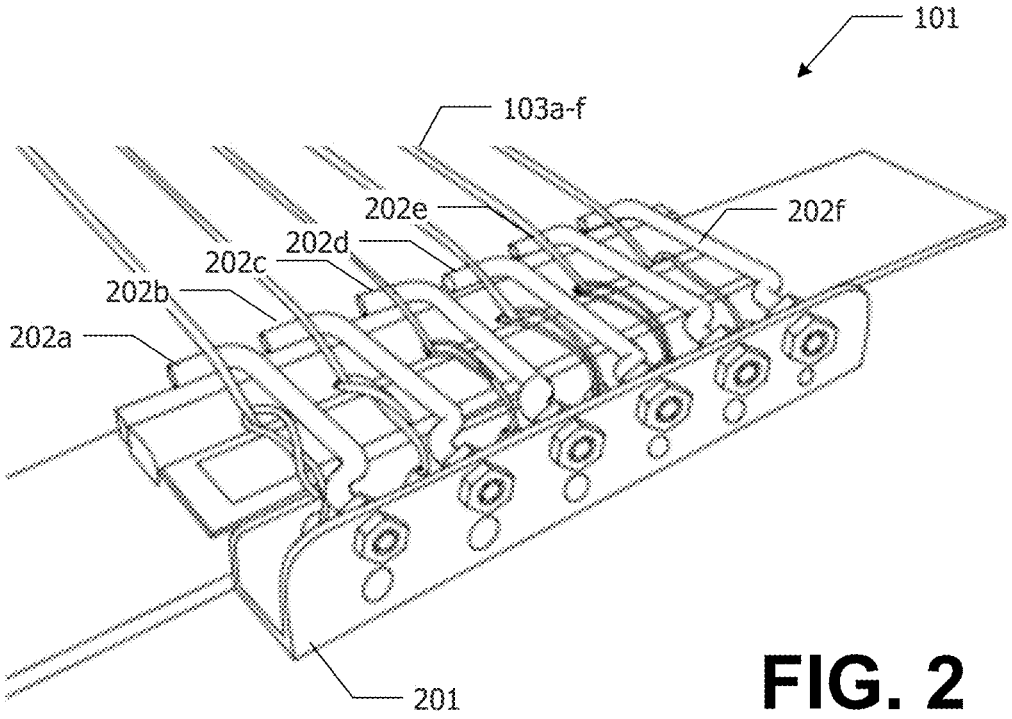

101
103a-f
202e
202f
202d
202c
202b
202a
201

FIG. 2

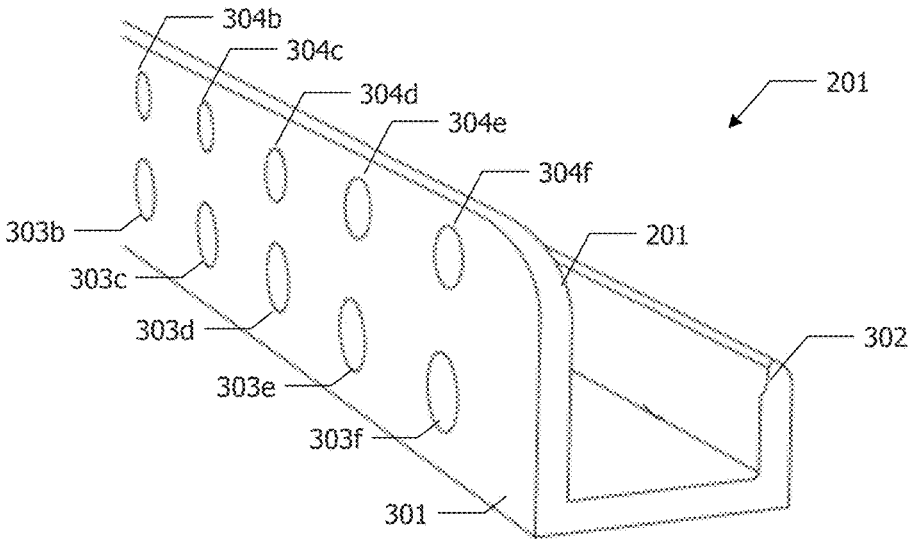

304b
304c
304d
304e
304f
201
303b
303c
303d
303e
303f
201
302
301

FIG. 3

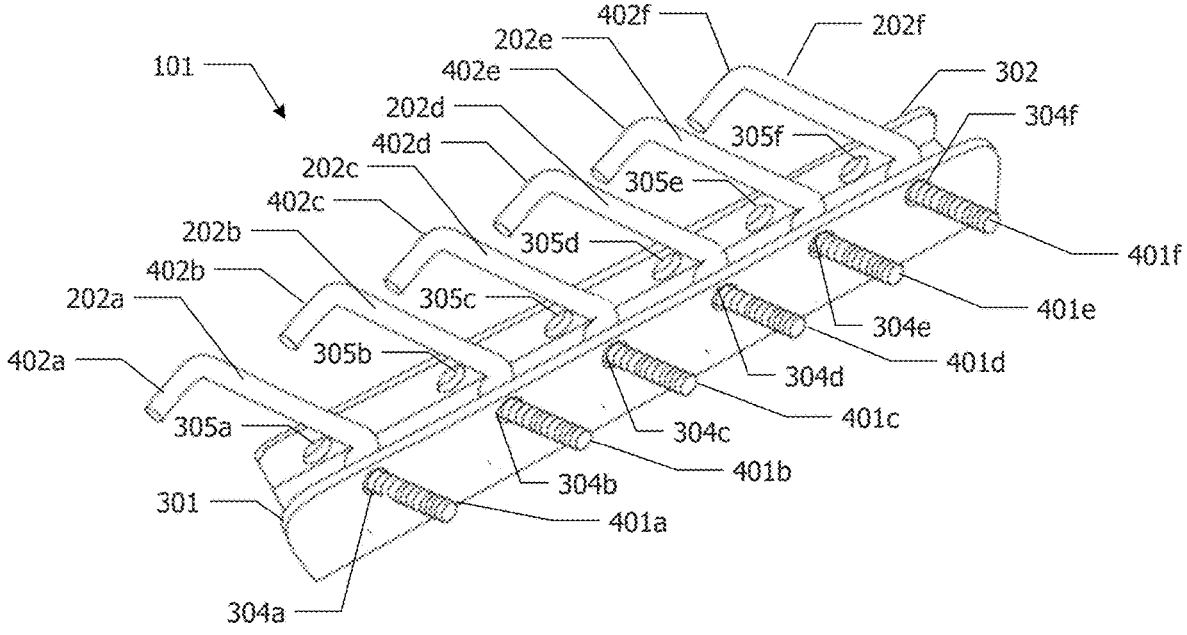

101
402f
202e
202f
402e
302
202d
304f
305f
402d
202c
305e
402c
202b
305d
401f
402b
305c
401e
202a
304e
305b
401d
402a
304d
305a
401c
304c
401b
304b
301
401a
304a

FIG. 4

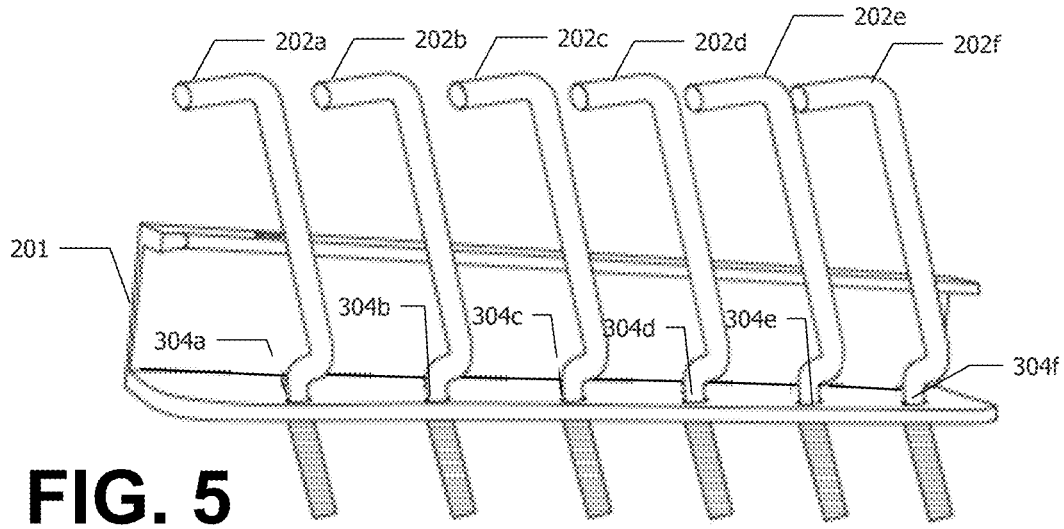


FIG. 5

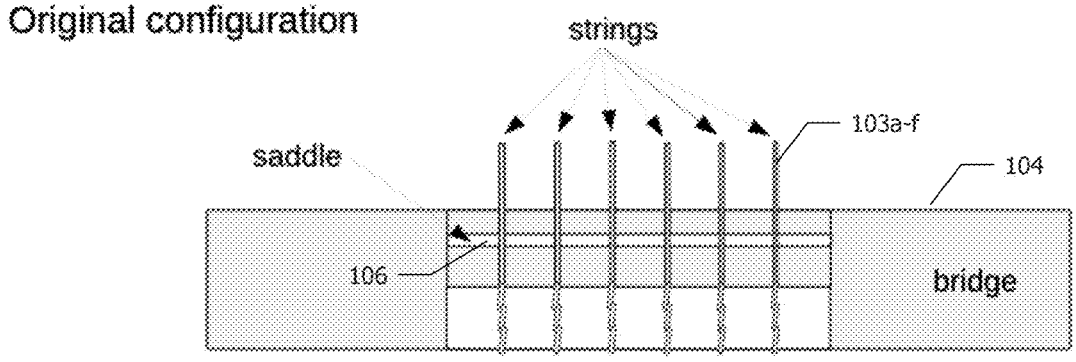


FIG. 6a

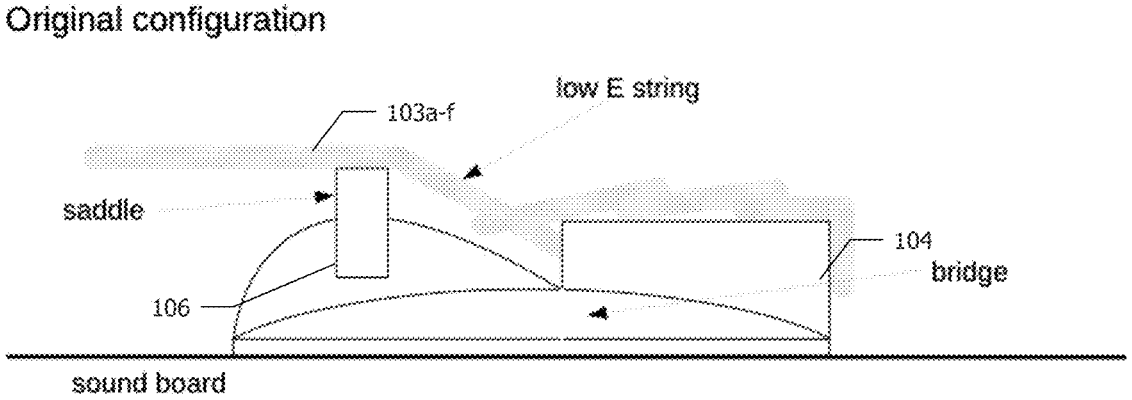


FIG. 6b

Compensating saddle

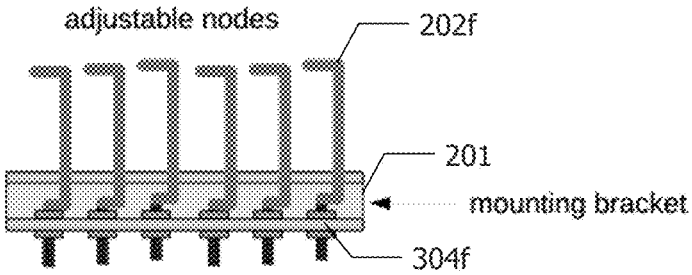


FIG. 7a

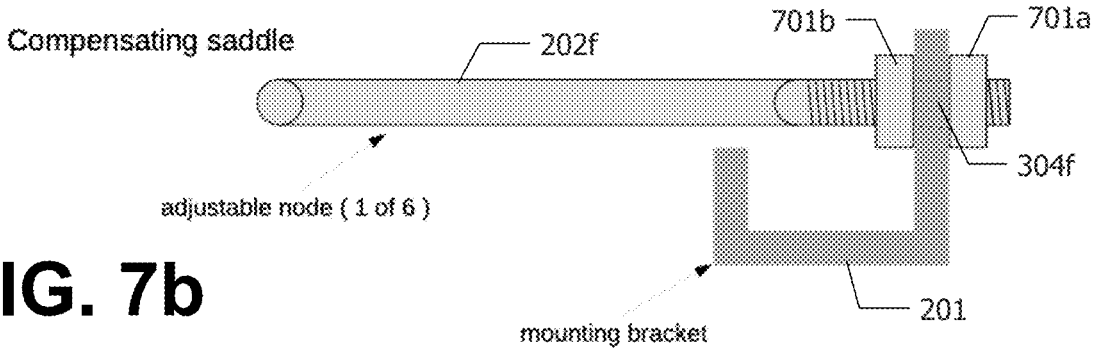


FIG. 7b

Compensating saddle mounted on Guitar

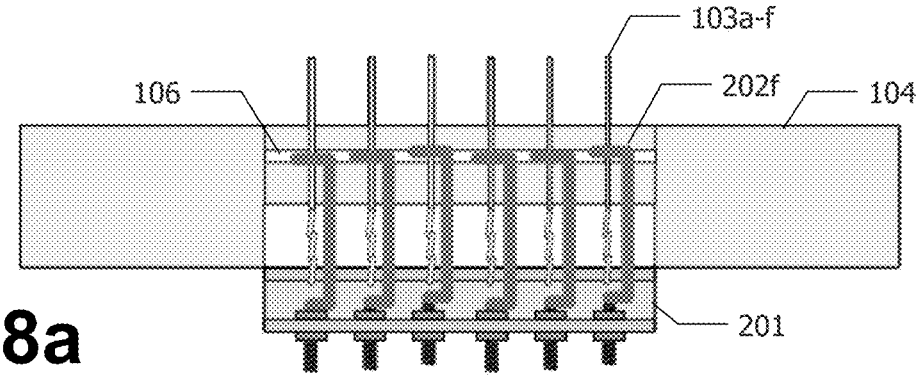


FIG. 8a

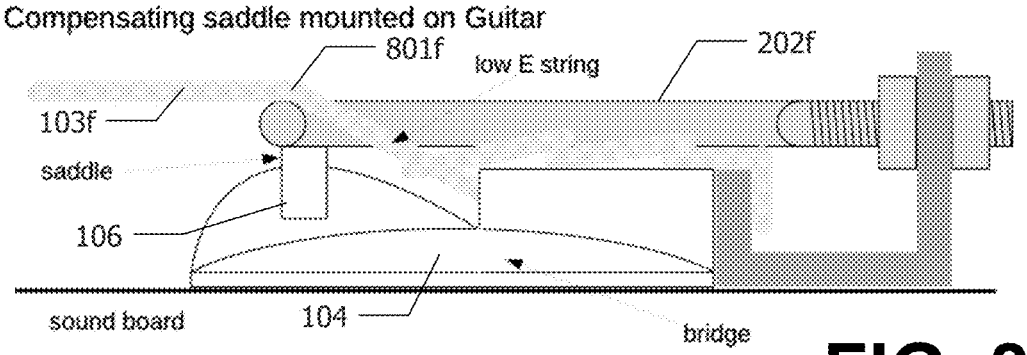


FIG. 8b

SUPPLEMENTAL COMPENSATING SADDLE FOR CLASSICAL GUITAR

TECHNICAL FIELD

This application relates in general to an article of manufacture for providing improved musical instruments, and more specifically, to an article of manufacture providing a supplemental compensating saddle for a classical guitar.

BACKGROUND

All fretted string instruments have the same problem with staying in tune as the notes progress up the neck towards the bridge. This problem is referred to as "intonation" in this context. The act of fretting a note increases the tension and changes the pitch. The degree to which this happens depends on many factors string tension, thickness, weight, height, pressure, etc. Therefore, the vibrational node at the bridge, also called a saddle on an acoustic instrument, is not equidistant from the 12th fret, as the nut, and must be movable based on conditions as listed above in order to maintain perfect pitch along the full range of the neck. Almost all electric guitars have bridges that adjust for intonation.

The bridge on an electric guitar plays no part in the sound production as the sound is generated by the pickups sensing the electromagnetic variance caused by the string vibration. Acoustic guitars transmit the energy from the vibrating strings into the sound board via the bridge/saddle assembly. The shape, thickness, and structure of the sound board and body amplify the sound. Acoustic guitars do not have adjustable bridges because the bridge or saddle is the thing that transmits the energy to create the sound and extra weight of a mechanism would adversely impact the energy transfer, and because modifying the sound board and/or bridge to attach a mechanism would negatively impact the sound of the instrument as well as the aesthetics.

All classical guitars have a fixed saddle and therefore suffer from tuning issues high on the neck. Musicians must constantly worry about keeping their classical guitar in tune for all of the reasons explained above. Therefore, a need exists for an article of manufacture for providing a supplemental compensating saddle for a classical guitar. The present invention attempts to address the limitations and deficiencies in prior solutions according to the principles and example embodiments disclosed herein.

SUMMARY

In accordance with the present invention, the above and other problems are solved by providing an article of manufacture providing a supplemental compensating saddle for a classical guitar according to the principles and example embodiments disclosed herein.

In one embodiment, the present invention is an article of manufacture for providing a supplemental compensating saddle for a classical guitar. The supplemental compensating saddle may be used with a classical guitar having a head, a neck, a sound board, a bridge, a saddle, and a set of strings running from the head to the bridge. The supplemental compensating saddle includes a mounting bracket having a higher rear vertical member and a lower front vertical member coupled together, the mounting bracket being mounted behind the bridge, a set of node assemblies coupled to the higher rear vertical member and extending across the bridge and under the set of strings, each of the node assemblies supporting a corresponding string within the set of strings, and a set of adjustable securing mechanisms coupling each of the node assemblies to the higher rear member of the mounting bracket, each adjustable securing mechanism enables each corresponding node assembly to move parallel to a path of the corresponding string within the set of strings.

In another aspect of the disclosure, each node assembly includes a threaded end coupled to the higher rear vertical member of the mounting bracket and a string support end, and a node rod connecting the treaded end to the string support end of each node assembly. The string support end is configured to be oriented perpendicular to a corresponding string supported by the node assembly.

In another aspect of the disclosure, the mounting bracket comprises a set of mounting holes through the higher rear vertical member and a set of stringing holes through the lower front vertical member, each of the set of stringing holes are parallel to the corresponding mounting hole.

In another aspect of the disclosure, each adjustable securing mechanism within the set of adjustable securing mechanisms comprises a front nut and a rear nut, the front nut and rear nut being coupled on the threaded end of each node assembly positioned on both sides of the higher rear vertical member as the node assembly passes through one of the set of mounting holes through the higher rear vertical member.

In another aspect of the disclosure, each string of the set of strings are oriented to pass over the string support end of one of the node assemblies from the head to the bridge of the guitar.

In another aspect of the disclosure, rotating the front nut and rear nut adjusts a location of the string supporting end of the corresponding node assembly about the saddle.

In another aspect of the disclosure, supplemental compensating saddle uses 6 node assemblies for the classical guitar having 6 strings.

In another aspect of the disclosure, each string within the set of strings passes through one of the set of stringing holes when secured to the bridge.

The foregoing has outlined rather broadly the features and technical advantages of the present invention in order that the detailed description of the invention that follows may be better understood. Additional features and advantages of the invention will be described hereinafter that form the subject of the claims of the invention.

It should be appreciated by those skilled in the art that the conception and specific embodiment disclosed may be readily utilized as a basis for modifying or designing other structures for carrying out the same purposes of the present invention. It should also be realized by those skilled in the art that such equivalent constructions do not depart from the spirit and scope of the invention as set forth in the appended claims. The novel features that are believed to be characteristic of the invention, both as to its organization and method of operation, together with further objects and advantages will be better understood from the following description when considered in connection with the accompanying figures. It is to be expressly understood, however, that each of the figures is provided for the purpose of illustration and description only and is not intended as a definition of the limits of the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

Referring now to the drawings in which like reference numbers represent corresponding parts throughout:

FIG. **1** illustrates a guitar having of an article of manufacture providing a supplemental compensating saddle for a classical guitar according to the present invention.

FIG. **2** illustrates an example embodiment of an article of manufacture providing a supplemental compensating saddle for a classical guitar according to the present invention.

FIG. **3** illustrates a mounting bracket that is part of an article of manufacture for providing a supplemental compensating saddle for a classical guitar according to the present invention.

FIG. **4** illustrates a mounting bracket and a set of adjustable nodes that are part of an article of manufacture providing a supplemental compensating saddle fora classical guitar according to the present invention.

FIG. **5** illustrates a top view of a mounting bracket and a set of adjustable nodes that are part of an article of manufacture providing a supplemental compensating saddle for a classical guitar according to the present invention.

FIGS. **6***a-b* illustrate a top and a side view of classical guitar saddle and bridge with strings attached.

FIGS. **7***a-b* illustrate a top and a side view of an article of manufacture providing a supplemental compensating saddle fora classical guitar according to the present invention.

FIGS. **8***a-b* illustrate a top and a side view of an installed article of manufacture providing a supplemental compensating saddle for a classical guitar according to the present invention.

DETAILED DESCRIPTION

This application relates in general a system and method for providing improved musical instruments, and more specifically, to an article of manufacture for providing a supplemental compensating saddle for a classical guitar according to the present invention.

Various embodiments of the present invention will be described in detail with reference to the drawings, wherein like reference numerals represent like parts and assemblies throughout the several views. Reference to various embodiments does not limit the scope of the invention, which is limited only by the scope of the claims attached hereto. Additionally, any examples set forth in this specification are not intended to be limiting and merely set forth some of the many possible embodiments for the claimed invention.

In describing embodiments of the present invention, the following terminology will be used. The singular forms "a," "an," and "the" include plural referents unless the context clearly dictates otherwise. As used herein, a plurality of items, structural elements, compositional elements, and/or materials may be presented in a common list for convenience. However, these lists should be construed as though each member of the list is individually identified as a separate and unique member. Thus, no individual member of such list should be construed as a de facto equivalent of any other member of the same list solely based on their presentation in a common group without indications to the contrary. As used herein, the singular forms "a," "an," and "the" are intended to include the plural forms as well, unless the context clearly indicates otherwise.

It further will be understood that the terms "comprises," "comprising," "includes," and "including" specify the presence of stated features, steps or components, but do not preclude the presence or addition of one or more other features, steps or components. It also should be noted that in some alternative implementations, the functions and acts noted may occur out of the order noted in the figures. For example, two figures shown in succession may in fact be executed substantially concurrently or may sometimes be executed in the reverse order, depending upon the functionality and acts involved.

The terms "musician," and "user" refer to an entity, e.g., a human, a supplemental compensating saddle for a classical guitar associated with the invention. The term user herein refers to one or more users.

The term "invention" or "present invention" refers to the invention being applied for via the patent application with the title "Supplemental Compensating Saddle for a Classical Guitar." Invention may be used interchangeably with saddle

In general, the present disclosure relates a system and method for providing a supplemental compensating saddle for a classical guitar. To better understand the present invention, FIG. **1** illustrates a guitar having of an article of manufacture providing a supplemental compensating saddle for a classical guitar according to the present invention.

The present invention is a compensating saddle **101** that does not require modifications the guitar **102**. It is mounted to the bridge **104** through the act of stringing **103***a-f* the instrument **102**. The number of strings may vary on classical guitars. As such, the present invention uses one node per string. The example embodiments of FIGS. **1-8** show a typical 6 string guitar for example proposed only. The number of nodes required by the present invention are not to be limited to these examples, except as recited within the attached claims.

The compensating saddle **101** may be added or removed with no impact or modification to the guitar **102**. The compensating saddle **101** is comprised of a mounting bracket **201** that has holes that coincide with the string holes in the existing bridge. The guitar strings **103***a-f* pass through these holes to attach the bracket **201** firmly to the bridge **104**. The compensating saddle **101** is not in contact with the sound board. One movable node assembly per string **202***a-f* is attached to the bracket **201**. Each of the node assemblies **202***a-f* are shaped such as to allow for the clearance of the strings **103***a-f* as they are normally tied. Using the node assemblies **202***a-f*, the strings **103***a-f* may be easily adjusted by insertion of the compensating saddle **101** to address the problem of intonation.

FIG. **2** illustrates an example embodiment of an article of manufacture providing a supplemental compensating saddle for a classical guitar according to the present invention. The compensating saddle **101** is shown in detail in FIG. **2** having the mounting bracket **201** attached behind the bridge **104**. The set of node assemblies **202***a-f* are coupled to the mounting bracket **201** and oriented under each string **103***a-f*. This compensating saddle **101** uses a replaceable saddle insert **106** that is lowered to account for the thickness of the movable nodes **202***a-f*. The node assemblies **202***a-f* are parallel to and in contact with the saddle and are free to move in a direction parallel to the length of the string. This movement of the node assemblies **202***a-f* changes the rear vibrational node relative to the frets and thus allows for maintaining pitch along the entire neck of the classical guitar **102**. Each of these components and their respecting interaction with each other are described in additional detail below.

FIG. **3** illustrates a mounting bracket that is part of an article of manufacture for providing a supplemental compensating saddle for a classical guitar according to the present invention. The mounting bracket **201** comprises a U-shaped bracket having a higher rear vertical member **301** and a lower front vertical member **302** coupled together. A sets of mounting holes **304***a-f* are arranged in horizontally across the higher rear vertical member **301** passing through

the rear member **301**. A set of stringing holes **305***a-f* are present in the lower front vertical member **202**, each stringing hole **305***a-f* being parallel to a corresponding mounting holes **304***a-f* through the rear vertical member **301**. Each of these of mounting holes **304***a-f* and its corresponding stringing holes **305***a-f* correspond to each string **103***a-f* of the guitar **102**.

The mounting bracket is used to support the node assemblies **202***a-f* as shown in FIG. **4-5**. The node assemblies **202***a-f* are coupled to the mounting bracket **201** with an adjustable securing mechanism. In a preferred embodiment, the adjustable securing mechanism is a pair of nuts **701***a-b*, as discussed in relations to FIG. **7** below. The mounting bracket **201** is typically 80 mm long and 13 mm on each side. Classical guitars normally have approximately 11 mm spacing on the strings. Therefore the length of the mounting bracket **201** for any particular guitar is dependent on the number of strings.

FIG. **4** illustrates a mounting bracket and a set of adjustable nodes that are part of an article of manufacture providing a supplemental compensating saddle for a classical guitar according to the present invention. FIG. **5** illustrates a top view of a mounting bracket and a set of adjustable nodes that are part of an article of manufacture providing a supplemental compensating saddle for a classical guitar according to the present invention. Each of the node assemblies **202***a-f* are inserted through one of the set of mounting holes **304***a-f* in the rear vertical member **301**.

Each node assembly **202***a-f* has a threaded end **401***a-f* and a string support end **402***a-f* separated by a node rod **403***a-f*. The threaded end **401***a-f* of the node assemblies **202***a-f* are inserted into the set of mounting holes **304***a-f* in the rear vertical member **301**. The threaded end **401***a-f* of the node assemblies **202***a-f* are configured to be oriented parallel to each of the corresponding string **103***a-f*. The string support end **402***a-f* is oriented to be perpendicular to the threaded end **401***a-f* of the node assemblies **202***a-f* to permit each string **103***a-f* to pass over each of the corresponding string support end **402***a-f*. The node assemblies **202-***f* are configured to be a single rod that bent into a configuration that orients the string support end **402***a-f* perpendicular and below each string **103***a-f* when the threaded end **401***a-f* of the node assemblies **202***a-f* are secured to the mounting bracket **201**.

FIGS. **6***a-b* illustrate a top and a side view of classical guitar saddle and bridge with strings attached. The guitar **102** is shown in its original configuration in FIG. **6***a-b* without the compensating saddle **101** in place. The set of strings **103***a-f* are shown running across the saddle **106** and terminating at the rear edge of the bridge. The reconfigured guitar **102** is described below in reference to FIGS. **8***a-b*.

FIGS. **7***a-b* illustrate a top and a side view of an article of manufacture providing a supplemental compensating saddle for a classical guitar according to the present invention. The node assemblies **202***a-f* are shown coupled to the mounting bracket **201** and secured by a front nut **701***b* and a rear nut **701***a* that attach to the treaded end **401***a-f*. The front nut **701***b* is placed onto each of the node assemblies **202***a-f* before the threaded end **401***a-f* is inserted into the set of mounting holes **304***a-f* in the rear vertical member **301**. When the threaded end **401***a-f* is inserted into the set of mounting holes **304***a-f* in the rear vertical member **301**, the front nut **702***b* is adjacent to a front surface of the rear vertical member **301**. The node assemblies are oriented to run over the front vertical member **302** and placing the string support end **402***a-f* perpendicular and below each string **103***a-f*. The rear nut **701***a* is added to each of the node assemblies **202***a-f* once the threaded end has passed through the set of mounting holes **304***a-f*. By tightening the front nut **701***b* and the rear nut **701***a* towards the rear vertical member **301**, each of the node assemblies **202***a-f* are held securely in place. Each node assembly **202***a-f* is limited to the extent it may move by the dimensions of the saddle insert **106**. The contact between the top of the saddle insert **106** and the bottom of the node assembly **202***a-f* defines the extreme forward and extreme backward positions. Typically, the movement will be about 3 mm.

To reposition a particular node assembly **202***a-f*, a user loosenz the nut **701***a-b* on the side opposite of the intended direction of travel. The nut on the same side of the intended direction of travel is then rotated until the particular node assembly **202***a-f* has moved the desired amount. The user then retightens the opposite nut to secure the particular node assembly **202***a-f* in its adjusted location. These adjustments may be made one node assembly **202***a-f* at a time as needed.

FIGS. **8***a-b* illustrate a top and a side view of an installed article of manufacture providing a supplemental compensating saddle for a classical guitar according to the present invention. The compensating saddle **101** is shown installed onto the guitar in FIG. **8***a-b*. Each string **103***a-f* is run over the string support end **402***a-f* of the node assemblies **202***a-f* as it rests on top of a saddle **106**. The strings **103***a-f* engage the mounting bracket **201** and are terminated at the bridge **104** as originally configured. The string support end **402***a-f* of the node assemblies **202***a-f* acts as an adjustable saddle that may be individually adjusted for each of the strings **103***a-f*.

To install a compensating saddle **101**, the user strings a guitar using the typical process with the exception of including the mounting bracket **201** while tying off the strings **202***a-f* on the bridge **104**. Each string **202***a-f* is threaded through the bridge **104** of the guitar **102** and through corresponding hole **303***a-f* in the mounting bracket **201** and then a knot is tied. Before each string **202***a-f* is tightened, each node assembly **202***a-f* is placed under a corresponding string **202***a-f* and through the mounting hole **304***a-f* in the mounting bracket **201**. Each node assembly **202***a-f* can be placed in a neutral position until the guitar **102** is tuned. For final tuning and fine adjustment of the intonation, each string **202***a-f* is tuned in the open position and at the 12_{th} fret (octave). The node assembly **202***a-f* is moved towards the 12_{th} fret to sharpen the 12_{th} fret tone and moved away to flatten the 12_{th} fret tone. Once installed, the fine tuning process is the same as with any compensating bridge.

Even though particular combinations of features are recited in the present application, these combinations are not intended to limit the disclosure of the invention. In fact, many of these features may be combined in ways not specifically recited in this application. In other words, any of the features mentioned in this application may be included to this new invention in any combination or combinations to allow the functionality required for the desired operations.

No element, act, or instruction used in the present application should be construed as critical or essential to the invention unless explicitly described as such. Further, the phrase "based on" is intended to mean "based, at least in part, on" unless explicitly stated otherwise.

What is claimed is:

1. An article of manufacture providing supplemental compensating saddle for a classical guitar, the classical guitar having a head, a neck, a sound board, a bridge, a saddle, and a set of strings running from the head to the bridge, the supplemental compensating saddle comprises:

a mounting bracket having a higher rear vertical member and a lower front vertical member coupled together, the mounting bracket being mounted behind the bridge;

a set of node assemblies coupled to the higher rear vertical member and extending across the bridge and under the set of strings, each of the node assemblies supporting a corresponding string within the set of strings; and

a set of adjustable securing mechanisms coupling each of the node assemblies to the higher rear member of the mounting bracket, each adjustable securing mechanism enables each corresponding node assembly to move parallel to a path of the corresponding string within the set of strings.

2. The supplemental compensating saddle according to claim **1**, wherein each node assembly comprises:

a threaded end coupled to the higher rear vertical member of the mounting bracket;

a string support end, the string support end configured to be oriented perpendicular to a corresponding string supported by the node assembly; and

a node rod connecting the treaded end to the string support end of each node assembly.

3. The supplemental compensating saddle according to claim **2**, wherein the mounting bracket comprises:

a set of mounting holes through the higher rear vertical member; and

a set of stringing holes through the lower front vertical member, each of the set of stringing holes are parallel to the corresponding mounting hole.

4. The supplemental compensating saddle according to claim **3**, wherein each adjustable securing mechanism within the set of adjustable securing mechanisms comprises a front nut and a rear nut, the front nut and rear nut being coupled on the threaded end of each node assembly positioned on both sides of the higher rear vertical member as the node assembly passes through one of the set of mounting holes through the higher rear vertical member.

5. The supplemental compensating saddle according to claim **4**, wherein each string of the set of strings are oriented to pass over the string support end of one of the node assemblies from the head to the bridge of the guitar.

6. The supplemental compensating saddle according to claim **5**, wherein rotating the front nut and rear nut adjusts a location of the string supporting end of the corresponding node assembly about the saddle.

7. The supplemental compensating saddle according to claim **1**, wherein supplemental compensating saddle uses 6 node assemblies for the classical guitar having 6 strings.

8. The supplemental compensating saddle according to claim **4**, wherein each string within the set of strings passes through one of the set of stringing holes when secured to the bridge.

* * * * *