Aug. 10, 1926. 1,595,798

P. MARINO

COMPENSATING BRIDGE FOR STRINGED MUSICAL INSTRUMENTS

Filed Oct. 10, 1924

Fig. 1.

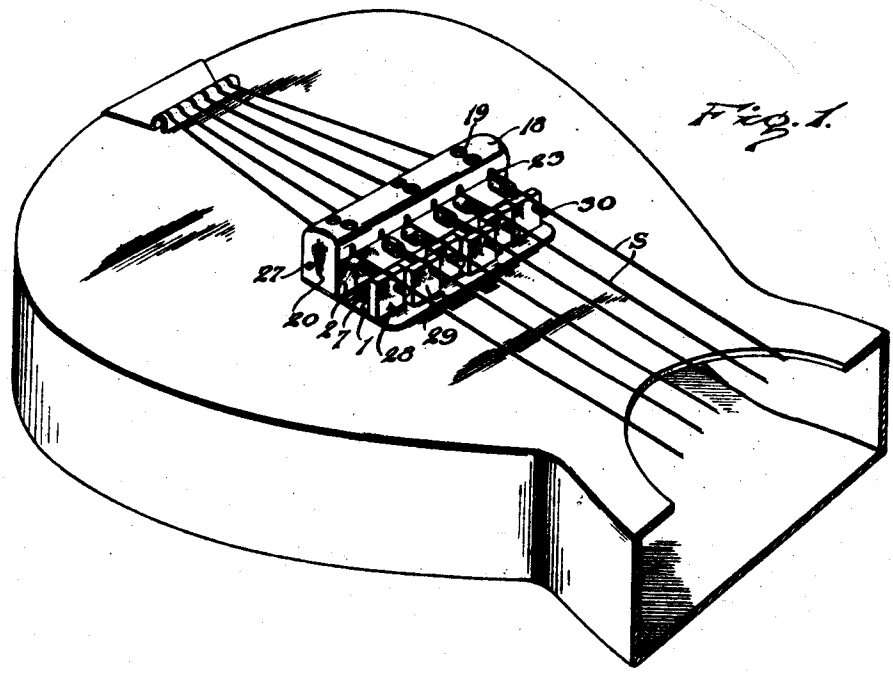


Fig. 2.

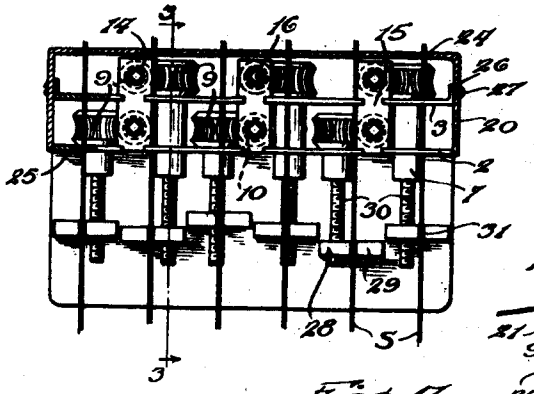


Fig. 3.

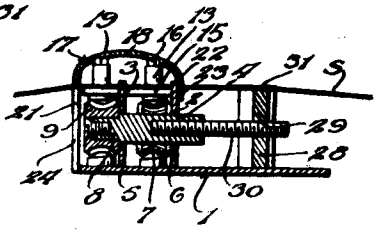
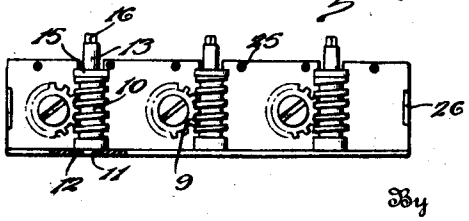


Fig. 4.



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UNITED STATES PATENT OFFICE.

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COMPENSATING BRIDGE FOR STRINGED MUSICAL INSTRUMENTS.

Application filed October 10, 1924. Serial No. 742,908.

This invention relates to improvements in bridges for stringed musical instruments.

It is a well known fact that regardless of careful tuning of a stringed musical instrument, one or more of the strings are liable to give off over-tones, when struck, due to a slight distortion in the sound board or head of the instrument or any inequalities in the bridge supporting the strings or in the strings themselves. The bridge of an ordinary stringed musical instrument comprises a solid or one-piece body having string receiving notches in its ridge, and where such a bridge is accurately positioned with all points of its ridge equidistantly spaced from the nut of the instrument, over-tones are more or less eliminated and the strings will give off true tones when vibrated. However, any slight deviation of the bridge from such adjustment is liable to affect the quality of the tones from one or more of the strings, and the present invention, therefore, has as its object to provide a bridge of such construction that, by a simple adjustment, any factors tending to produce over-tones when the strings are vibrated, may be compensated for, and the quality of the tones greatly improved.

Another object of the invention is to provide a bridge for stringed musical instruments embodying an individual rest for each string, and means for independently and individually adjusting said rests, so that the resting points of the strings may be varied, thereby enabling the player of the instrument to readily compensate for any factors which might tend to affect the proper uniform vibration of any one or more of the several strings.

In the accompanying drawings:

Figure 1 is a perspective view of the bridge embodying the invention, applied to a guitar, only so much of the instrument as is necessary to illustrate the application of the invention, being shown in the figure.

Figure 2 is a plan view of the bridge, the casing thereof being shown partly in section.

Figure 3 is a vertical front to rear sectional view taken substantially on the line 3—3 of Figure 2, looking in the direction indicated by the arrows.

Figure 4 is a rear elevation of the bridge, the casing being removed.

The bridge embodying the invention comprises a base plate which is indicated by the numeral 1 and which may be of any desired marginal contour and dimensions and is provided upon its upper side with two upright bearing members indicated one by the numeral 2 and the other by the numeral 3, the members being integrally formed with the plate 1, or in the nature of small rectangular plates or strips secured at their lower edges to the said base plate. The said bearing members 2 and 3 extend in parallel planes transversely of the upper side of the plate 1 and they are formed at intervals in their length respectively, with openings 4 and 5, corresponding ones of the openings in the two members being in alinement, as clearly shown in Figure 3 of the drawings. In the illustrated embodiment of the invention, sleeves 6 are rotatably mounted in the openings 4 and 5 and each sleeve is formed with a threaded socket 7 opening through the forward end of the sleeve, the sleeve at its rear end being reduced and squared to provide a portion 8 to which is fitted and suitably secured a worm gear indicated by the numeral 9. By reference to Figure 2 of the drawings, it will be observed that alternate ones of the sleeves 6 are of a length to extend through both of the members 2 and 3, whereas the other sleeves extend only through the member 2, so that the worm gears or pinions upon the rear ends of the first mentioned sleeves are located in rear of the member 3, whereas the pinions upon the rear ends of the other sleeves are located in rear of the member 2, the arrangement being such as to effect economy in space, and permit of relative close arrangement of the sleeves to one another. The numeral 10 indicates small worm shafts which are stepped at their lower ends, as at 11, in openings 12 in the base plate 1, certain of the worms being located in rear of the bearing member 2 and others in rear of the bearing member 3. The upper ends of the worm shafts or spindles are reduced to provide small cylindrical portions 13 which are received in bearing openings 14 formed in bearing

plates 15 which are mounted upon the upper portions of the bearing members 2 and 3, and the worm spindles are so arranged that each of the spindles will mesh with an individual one of the worm pinions 9. The upper extremity of the portion 13 of each worm spindle is reduced and squared as at 16 for the application thereto of a suitable key (not shown) whereby the spindle may be rotated so as to impart rotary motion to the respective sleeve 6 for a purpose to be presently explained.

A casing, indicated in general by the numeral 17, is preferably provided for covering and concealing the gearing and to provide against contact of the wrist or sleeve of the player therewith, and this casing comprises a rounded top 18 having openings 19 formed therein and located immediately above the squared extremities 16 of the worm spindles to permit of insertion of the key referred to above. The casing further includes ends 20 which extend downwardly at opposite ends of the bearing members 2 and 3 and from the member 2 rearwardly to the rear wall of the casing which is indicated by the numeral 21 and which depends in rear of the pinions 9, as best shown in Figure 3 of the drawings. The casing has a short depending front wall 22 which is slotted as at 23, to accommodate the strings of the instrument, indicated by the letter S, and the wall 21 of said casing is formed with slots 24 for a like purpose, the said slots opening through the lower edge of the said wall. In like manner, the bearing members 2 and 3 are formed with alined openings 25 through which the strings S are passed, the strings, of course, extending above the pinions 9 and their respective worm spindles so as not to come in contact therewith. It is preferable that the ends of the bearing member 3 be provided with ears 26 having threaded openings to receive screws 27 which are fitted through the end walls 20 of the casing 17, so that by removing these screws, the casing may be bodily removed and access had to the adjusting mechanism of the bridge.

In order that the length of the portion of each individual string which extends between the nut of the instrument and the bridge may be varied to compensate for factors which, if an ordinary bridge were used, would cause over-tones, the bridge embodying the present invention includes a plurality of individual rest members for the strings, indicated in general by the numeral 28. Each of these rest members comprises a preferably rectangular head 29 having a threaded shank 30 fitted through a threaded opening therein and fitted at its rear end into the socket 7 of the respective sleeve 6. The vertical sides of the several rest members are disposed relatively close to one another throughout the series, and their lower sides rest squarely upon the upper side of the base plate 1, as clearly shown in Figure 3 of the drawings. The upper side of each head 29 is formed with a shallow notch 31 to accommodate a respective string, and it will be observed by reference to the several figures that the strings are led from the tail piece of the instrument, through the slots 24, openings 25, and slots 23, to the individual rests 28, where they are seated in their respective notches 31. In practice, the rest members will be so adjusted as to extend transversely in alinement but should it be found that any one or more of the strings, when vibrated, gives an over-tone, this may be remedied by applying the key to the respective worm spindle 13 and rotating the worm to effect rotation of the respective sleeve 6 and thereby forwardly or rearwardly shift the head 29 and thus effect a lengthening or shortening of the portion of the string which extends between the nut and the respective rest member.

While I have illustrated and described an arrangement of gearing for the purpose of effecting adjustment of the string rests, it will be evident that various means might be employed for this purpose without departing from the spirit of the invention, the invention contemplating, broadly, the provision of a bridge for stringed musical instruments embodying a plurality of independently adjustable string rests and any suitable means for adjusting the same.

It will be evident that inasmuch as the heads 29 are threaded to the stems 30, any one of the heads may be removed and replaced by a new one, in the event such replacement becomes necessary, or in the event of loss of any one of the heads.

Having thus described the invention, what I claim is:

1. A bridge for stringed musical instruments comprising a base to be mounted upon the instrument, a housing carried by said base, sleeves rotatably mounted in said housing and projecting forwardly from the housing, threaded stems extending from the forward ends of said sleeves and rotating with the sleeves, string rests slidable along said base and having threaded openings receiving said stems to cause the string rests to be moved longitudinally upon said base when said sleeves and stems are rotated, and means in said housing to individually rotate said sleeves and through the medium of said stems effect individual adjustment of said string rests.

2. A bridge for stringed musical instruments comprising a base to be mounted upon the instrument, a housing extending transversely across the rear portion of said base, string rests upon said base in front of said housing and movable towards and away

from the housing, adjusting stems for said string rests extending into said housing and having their outer end portions engaged with said string rests, and means in said housing engaged with said stems to impart movement to said stems for individual adjustment of said stems.

3. A bridge for stringed musical instruments comprising a base to be mounted upon the instrument, a housing extending transversely across the rear portion of said base, string rests upon said base in front of said housing and movable towards and away from the housing, adjusting stems for said string rests extending into said housing and rotatable therein, operating shafts rotatably mounted in said housing and disposed vertically therein, said housing having its upper wall provided with openings permitting access to the upper ends of the shafts for rotation thereof, and means for transmitting rotary movement from said shafts to said stems whereby said stems may be individually rotated to effect adjustment of their cooperating string rests.

4. A bridge for stringed musical instruments comprising a base to be secured upon the instrument, a housing carried by the rear portion of said base, string rests slidable upon the forward portion of said base towards and away from the housing, stems rotatably mounted in said housing and projecting forwardly from the housing and having threaded forward portions screwed through threaded openings in said string rests to impart sliding movement thereto when the stems are rotated, and means for rotating said stems to effect individual adjustment of the string rests engaged thereby.

In testimony whereof I affix my signature.

PASQUALE MARINO. [L. S.]