Aug. 11, 1931. A. LARSON 1,818,631

FRETTED INSTRUMENT ADJUSTING MEANS

Filed May 29, 1930

Fig. 1.

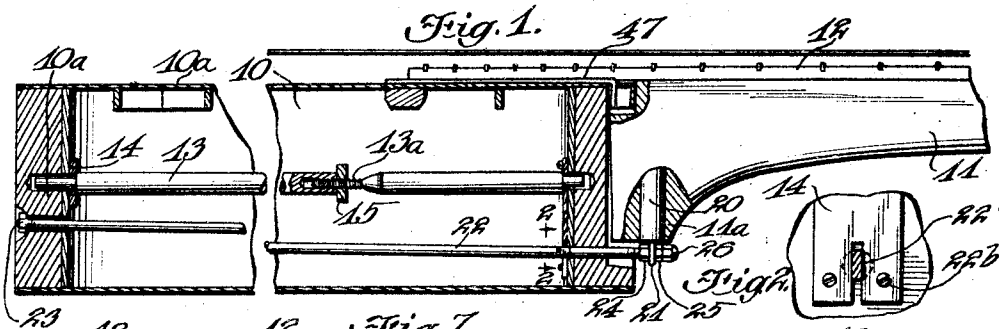
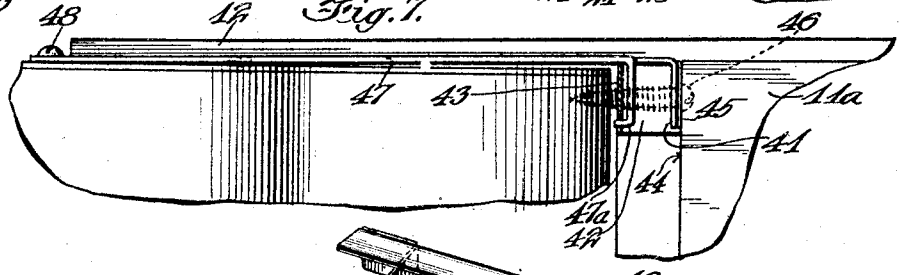


Fig. 2.

Fig. 7.



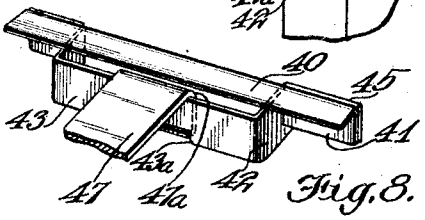
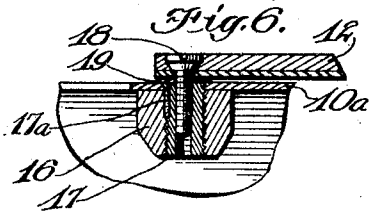


Fig. 8.

Fig. 6.



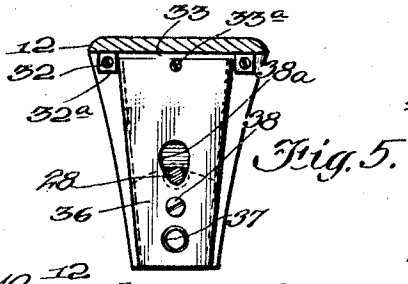
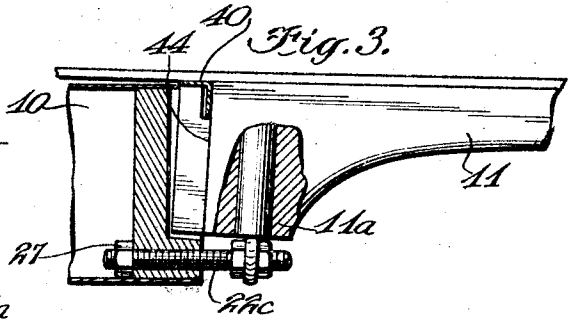


Fig. 5.

Fig. 3.



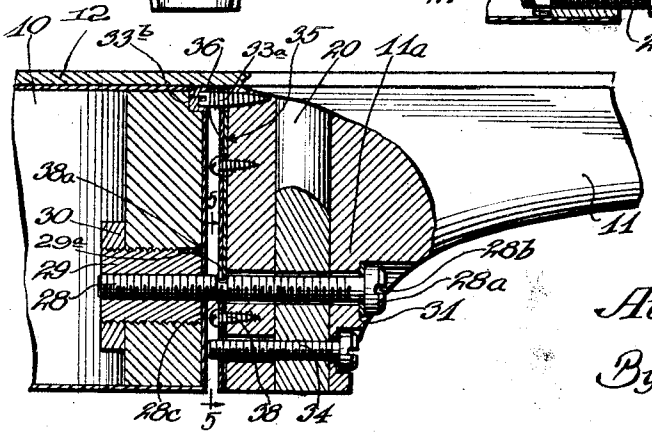


Fig. 4.

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UNITED STATES PATENT OFFICE

AUGUST LARSON, OF CHICAGO, ILLINOIS

FRETTED INSTRUMENT ADJUSTING MEANS

Application filed May 29, 1930. Serial No. 457,367.

My invention relates to fretted musical instruments, such as guitars, and more particularly to the method and means of attaching the neck to the body of the instrument, and my main object is to provide novel means of attachment which are also adjustable to reinforce the neck against the pulling strain of the strings.

A further object of the invention is to embody in the neck unit a reinforcing base which relieves the material of the unit from undue strain that may be imposed by the adjusting means.

Another object of the invention is to so build the adjusting means that it is controllable from the outside of the instrument body.

A final but nevertheless important object of the invention is to build the improved instrument with few and rugged connections which are not expensive to manufacture and durable in use.

With the above objects in view and any others that may suggest themselves from the specification and claims to follow, a better understanding of the invention may be had by reference to the accompanying drawings, in which—

Figure 1 is a longitudinal section, partly in elevation, of the main portion of a fretted instrument, such as a guitar;

Fig. 2 is a section on the line 2—2 of Figure 1;

Fig. 3 is an enlargement taken from Figure 1, but showing a modification in the adjusting means;

Fig. 4 is an enlarged view showing a further modification of the adjusting means;

Fig. 5 is a section on the line 5—5 of Figure 4;

Fig. 6 is a sectional detail showing the connection for the finger board with the body of the instrument;

Fig. 7 is a fragmental elevation of a rockable connection between the neck and body of the instrument; and

Fig. 8 is a perspective view of the connection shown in Figure 7.

Referring specifically to the drawings, 10 denotes the body of the instrument, 11 the neck and 12 the finger board thereof. Within the body, and near the top I have provided a stay-bar 13, which is in two parts threaded in each other, as indicated at 13*a*. The ends of the stay-bar lodge in cavities 10*a* made in the ends of the instrument body, the stay-bar ends being reduced to provide shoulders for the stay-bar, and these shoulders bearing against lining plates 14. By turning either stay-bar section in the proper direction, the stay-bar may be expanded to bear firmly against the ends of the instrument body and so check collapsing tendencies thereof. A nut 15 secures the adjustment of the stay-bar sections.

The neck 11 of the instrument which carries the finger board 12, is designed to be rockable relative to the body of the instrument. It is, however, attached to the latter as shown in Figure 6. Here it is seen that the top of the instrument body is reinforced with an internal block 16 in which is lodged a nut 17 made with a peripheral groove to receive a locking screw 17*a*. The inner end of the finger board 12 receives a screw 18 which is directed into the nut 17 to secure the finger board to the instrument body. This connection is, of course, adjustable to relieve strain or impart the proper position to the finger board; and one or more washers 19 may be interposed between the finger board and the nut to set an adjustment. The fastening just described is more in the nature of an anchor than a rigid assembly, since some flexibility is required in the finger board to allow for the rockable movement intended for the neck 11. This flexibility is to some extent afforded by the diaphragm-like nature of the thin top 10*a* of the instrument body.

It is well known that the pull of the strings draws upon the instrument neck with a buckling tendency, causing the instrument to warp and the strings to lose their pitch. It is therefore advisable to counteract the pulling action of the strings by drawing the neck downwardly. I accomplish this action indirectly by drawing inwardly upon the base 11*a* of the neck. As clearly shown in Figure 1, I embed a metal pin 20 ver-

tically in such base, extending an eye 21 downwardly from the pin. In the lower portion of the instrument body, I dispose a longitudinally directed rod 22, both of whose ends are threaded. The rod passes through the tail portion of the instrument body to receive a nut 23 and through the opposite end for the eye 21, receiving a nut 24 before the eye, a nut 25 after the same, and a final or lock nut 26 beyond the nut 25. It will be seen that by manipulating the nuts 24 and 25 in the proper direction, a drawing or repelling action may be imparted to the neck base 11*a*, and after an adjustment is fixed it may be secured by the lock nut 26. The rod 22 may be secured from turning by suitable means, but I prefer the means shown in Figures 1 and 2. Here it is seen that the rod is cut flat from both sides as shown in Figure 2, and that the corresponding plate 14 is divided with two forks straddling the flattened portion of the rod as clearly indicated in Figure 2. With the plate 14 secured to the instrument end by screws 22*b*, it serves as a positive lock to prevent the turning of the rod 22 while the nuts at its ends are manipulated. The rod 22 therefore serves as the means to draw the neck away from the pull of the strings.

Figure 3 shows a modification of the adjusting means just described, wherein the rod 22 is shortened to the length of a screw, as indicated at 22*c*. This screw receives a nut 27 inside the instrument body. When the screw has been tightly threaded through the body wall and the nut 27 firmly secured, the screw may be considered as sufficiently rigid for the purpose of drawing the neck as described. Figures 4 and 5 show a further modification of the adjusting means. Here a bolt 28 is directed from the neck freely through the pin 20 and into a nut reinforcement 29 of the instrument body, a key screw 29*a* and a lock nut 30 being used on the inside to secure the reinforcement 29 against loosening. The head 28*a* of the bolt 28 bears against a metal washer 31, and has a slot 28*b* for the application of a screw driver to advance or retract the bolt relative to the nut reinforcement 29. This action is intended to vary or adjust the direct spacing of the neck base from the instrument body at a point of medial height. Actually, the assembly of the neck base tenon and the instrument body mortise is a close one, but the spacing apparent in Fig. 4 is intended for a clearer view of the element entering into the assembly. At the top, the neck base end receives screws 32 whose heads are backed by washers 32*a* of hard material; and between the screws 32 the tenon 33 of the neck base receives a similar screw 33*a*. The top rim of the instrument body is reinforced at the site of the mortise by a fibre or ivory strip 33*b*. In registration with the screws 32 and 33*a*—which are substantially alined, as seen in Fig. 5—the strip 33*b* and the body rim portions adjacent to it are bored with frontal cavities to receive the respective screws with an easy fit, the cavity in the strip 33*b* being seen in Figure 4 as an example. The line of screws furnishes a horizontal pivot for the neck as against the instrument body and also squares the neck base from lateral play relative to the latter, the hard strip 33*b* and washers 32*a* protecting the wood parts from yielding to the pressure of the screws. Here it may be added that the neck is also anchored against lateral play by the connection of the screw 18, previously described. At the bottom, another screw 34 is employed, this screw, however, being threaded through the pin 20 and adjusted to bear against the end of the instrument body. Thus, it has the function of a set screw to fix the adjustment of the bolt 28. The latter is prevented from receding relative to the neck base 11*a* by being annularly grooved as indicated at 28*c* next outside the end of the neck base which faces the instrument body. Here the neck base tenon 33 receives a facing plate 35 and a slide plate 36 in intimate succession. These plates are apertured as indicated at 37 to receive screws 38 when the plates are positioned as shown. However, the slide plate 36 has a downwardly tapered hole 38*a* through which the bolt 28 passes, the upper portion of the hole being large enough to permit the passage of the bolt while the lower one being only large enough to accommodate the grooved portion 28*c* thereof. Thus, in assembling the plates, the slide plate 36 is first positioned low in order to allow the passage of the bolt. When the groove 28*c* has assumed the position opposite the slide plate, the latter is raised as indicated in Figure 5 to engage the grooved portion with the smaller end of the hole 38*a*, thereby locking the bolt from retraction relative to the neck base 11*a*. The two plates now register with the holes for the screws 38, and when these are applied as shown in Figure 4, the bolt 28 may be considered as locked from endwise motion relative to the neck base. The adjustment of the neck may now be governed by the turning of the bolt in one or the other direction, the screw 34 then being advanced to frictionally lock the adjustment, and also counteract any possible play in the parts owing to their inherent flexibility.

A novel expedient for reinforcing the rockable connection between the instrument body and the neck is shown in Figures 7 and 8. Here it will be noted that the top corner of the body is reinforced by a metal strip 40 whose terminal portions have downward wings 41. Between these are the sides 42

of a strap 43 which seats in a cavity 44 of the neck base 11*a* and has ends 45 applied to the base of the cavity. Screws 46 are applied by way of the ends 45 and the wings 41 and directed to the ends of the instrument body, whereby to secure the assembly of the strip 40 and the strap 43 to the latter. The finger board 12 now receives a reinforcing strip 47 from the bottom, the inner end of this strip being secured to the instrument body by a screw 48 or by the manner of the screw 18 and the outer end being formed with a hook 47*a*, which straddles medially cut-down portions 43*a* of the strap 43. The instrument neck is thus rockably disposed relative to the assembly of the strip 40 and strap 43, which assembly is rigidly secured to the instrument body as before explained. Thus, the instrument neck is flexible or floats in a sense, and its base may be secured with any of the connections or adjusting means hereinbefore described to alter and fix its angle.

It will be seen that the means described for the disposal and adjustment of the instrument neck relative to the body are positive and involve simple and sturdy connections. The adjustments may be made without particular skill, and serve to maintain the instrument neck in proper position for indefinite periods without frequent attention or adjustment.

I claim:

1. Adjusting means for the neck base of a musical stringed instrument relative to the body of the latter comprising, a bolt from the medial portion of the neck base threaded into the body wall to secure and adjustably space the neck from the body, the latter having medial and lateral facial cavities near the top, and medial and lateral screws directed from the upper part of the neck base to seat with their heads loosely in said cavities and constitute a pivot for the neck base during the adjusting action of said bolt.

2. The structure of claim 1, and facings of hard material backing the heads of the screws.

3. The structure of claim 1, and a strip of hard material laid medially in the top rim of the instrument body and formed with a cavity for the medial screw.

4. The structure of claim 1, and a screw directed from the lower portion of the neck base against the body to lock said adjustment.

5. Adjusting means for the neck base of a musical stringed instrument relative to the body of the latter comprising, a bolt directed from the neck base and screwed into the body, said bolt having an annular groove next outside the neck-base end which is opposite the body, and a plate on said end and having a hooked portion engageable with said groove to lock the bolt from longitudinal motion relative to the neck base.

6. Adjusting means for the neck base of a musical stringed instrument relative to the body of the latter comprising, a bolt directed from the neck base and screwed into the body, said bolt having an annular groove next outside the neck-base end which is opposite the body, a plate on said end and having an opening for the passage of the bolt, said opening tapering toward one end and said plate being shiftable to engage the grooved portion of the bolt in the small end of the opening whereby to anchor the bolt from endwise motion relative to the neck base, and means for fastening the plate to the latter in anchoring position.

7. Adjusting means for the neck of a stringed musical instrument comprising, a tapped block built into the top of the instrument body, a screw directed from the inner end of the finger board into the block whereby to anchor such end to the top of the instrument, pivot means between the upper portion of the neck base and the instrument body, and means to control and set the pivotal relation between the latter and the neck base.

8. The structure of claim 7, and spacing means applicable to the screw to adjust the finger board relative to the top of the instrument body.

9. The structure of claim 1, and a strip of hard material laid medially in the top rim of the instrument body and formed with a cavity for the medial screw, and said adjusting means passing freely through the core.

10. The structure of claim 1, and a strip of hard material laid medially in the top rim of the instrument body and formed with a cavity for the medial screw, and a locking screw directed from the neck base against said body end, the locking screw being threaded through the core.

In testimony whereof I affix my signature.

AUGUST LARSON.