Feb. 25, 1947. G. PROLL 2,416,593

STRING TENSIONING DEVICE FOR MUSICAL INSTRUMENTS

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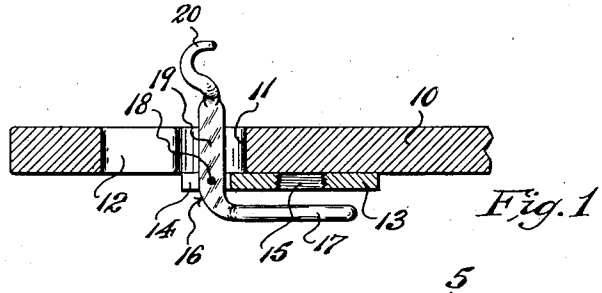


Fig. 1

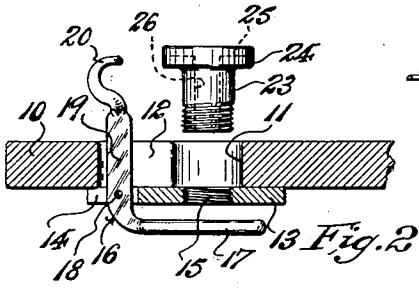


Fig. 2

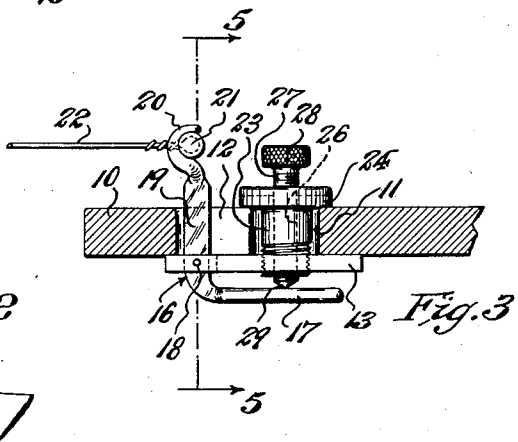


Fig. 3

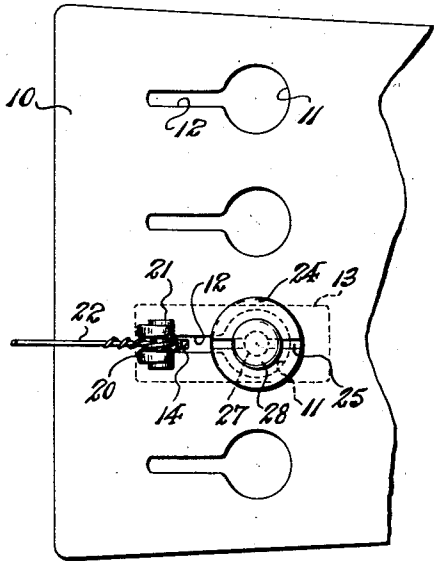


Fig. 4

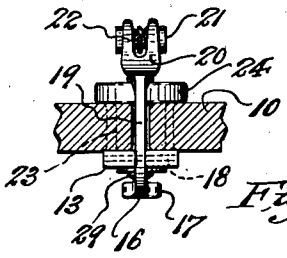


Fig. 5

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STRING TENSIONING DEVICE FOR MUSICAL INSTRUMENTS

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1 Claim. (Cl. 84—297)

1

This invention relates to means for adjusting the tension of strings on stringed instruments of the violin type, and especially for tensioning of metallic strings of the larger sizes of instruments, such as cellos, base viols and the like; and the invention has reference, more particularly, to an improved tensioning device for application to the tail-piece of a stringed instrument, whereby, upon manipulation of the device, a very accurate final tuning of the string served thereby may be attained.

String tensioning devices as heretofore provided have comprised a pivoted bell-crank lever mounted on a base so attached to the instrument tail-piece that the upstanding arm of the bell-crank and the end of the base to which said bell-crank lever is pivoted are disposed to project beyond the free forward end of the tail-piece. This is objectionable, not only as unsightly, but for the further reason that such projecting parts are not firmly supported against vibration, so that undesirable buzzing or humming is likely to occur.

It is an object of this invention to provide a novel construction of string tensioning device which, when operatively mounted on an instrument tail-piece, lies wholly within the confines of the free forward end of said tail-piece, and which is so related to the latter that the base of the device is firmly abutted throughout its total length against the tail-piece body, and thus held tightly against vibration relative to the latter; the construction being of such novel character that the upstanding arm of the bell-crank lever can be inserted upwardly through the eye or large end of a key-hole type opening with which the tail-piece is provided, and then moved forward to extend upwardly through the notch or slot end of said opening, said arm being formed to provide a thin blade-like body portion of less thickness than the width of said slot end, whereby to be freely oscillatable within the latter; the base of the device having a threaded opening adapted to register with the eye or large end of the tail-piece opening, when disposed in operative assembled relation to the tail-piece, said threaded opening being adapted to receive the clamp screw for affixing said base in place, and said clamp screw being adapted to receive an adjusting screw threaded therethrough and manipulatable to operatively engage and bear on the underlying bottom arm of the bell-crank lever.

The invention has for another object to provide the upstanding arm of the bell-crank lever with a novel string seating fork or double hook adapted to receive the anchoring ball of a ball-string.

Other objects of this invention, not at this time more particularly enumerated, will be understood from the following detailed description of the same.

2

An illustrative embodiment of this invention is shown in the accompanying drawings, in which:

Fig. 1 is a longitudinal sectional view showing the base and pivoted bell-crank lever as initially applied to an instrument tail-piece preparatory to mounting the same thereon; Fig. 2 is a similar view showing the base and pivoted bell-crank lever shifted to operative position on the tail-piece ready to be affixed to the latter by the clamp screw of the device; Fig. 3 is a similar view showing the complete device operatively assembled with and affixed to the tail-piece; Fig. 4 is a top plan view of the device as operatively assembled with and affixed to the tail-piece; and Fig. 5 is a cross-sectional view, taken on line 5—5 in Fig. 3, the device being shown in elevation.

Similar characters of reference are employed in the above-described views to indicate corresponding parts.

In the drawings, the reference character 10 indicates the tail-piece of a stringed instrument, the same being provided with the usual key hole slots ordinarily employed to receive anchoring attachment of the instrument strings to said tail-piece; said key hole slots each comprising an eye or enlarged rear end portion 11 and a notch or slot end 12 forwardly extending therefrom.

The novel string tensioning device according to this invention comprises a base plate 13 having a bifurcate forward end portion formed by a reentrant slot 14. Intermediate said bifurcate forward end portion and the rear end of said base plate 13, the base plate is provided with an internally screw-threaded opening 15.

Entered in the slot 14 of said base plate 13 is the upstanding arm of a bell-crank lever which comprises said upstanding arm 16 and a rearwardly extending bottom arm 17 which underlies said base-plate. Said bell-crank lever is pivotally connected with said base-plate by a transverse pivot or fulcrum pin 18. Said upstanding arm of the bell-crank lever comprises a thin blade-like body portion 19 of less thickness than the width of the notch or slot end 12 of a tail-piece key hole slot. Said upstanding arm of the bell-crank lever terminates, at its upper free end, in a rearwardly open bifurcate or forked hook element 20 adapted to receive the ball or anchor piece 21 of a ball string 22 desired to be served by the tensioning device. Said bifurcate or forked hook element 20 is of overall lateral or horizontal cross-sectional dimensions less than the diameter of the eye or enlarged rear end portion 11 of a key hole slot of the tail-piece 10, whereby said element 20 may be passed upwardly through said eye or enlarged rear end portion of the key hole slot.

To apply the string tensioning device to the instrument tail-piece, the base plate 13 is passed beneath the latter and disposed so that the up-

standing arm 16 of the bell-crank lever is axially aligned with the eye or enlarged rear end portion 11 of a selected key hole slot of said tail-piece; whereupon the base plate is raised to abut the underside of the tail-piece, thus causing the upstanding arm 16 of the bell-crank lever, together with the bifurcated or forked hook element 20 thereof, to pass upwardly through said eye or enlarged part 11 of said key hole slot (see Fig. 1). When the base plate 13 and bell-crank lever are thus positioned, the base plate is slid forward along the underside of the tail-piece 10, so that the blade-like body portion 19 of the bell-crank lever enters the notch or slot end 12 of the key hole slot whereby to be lodged therein, while at the same time the screw-threaded opening 15 of the base plate 13 is moved into axial alignment with the eye or enlarged part 11 of said key hole slot (see Fig. 2). As thus disposed, the base plate 13 is ready to be affixed to the tail-piece. The means for affixing said base plate 13 to the tail-piece comprises a clamp screw 23 having an enlarged head portion 24; said head portion being preferably provided with a transverse driving slot 25 adapted to be engaged by a screw driver or like tool. Said clamp screw 23 is passed downwardly through the eye or enlarged part 11 of the key hole slot, and then screwed into the screw-threaded opening 15 of the base plate 13 until the head portion 24 is stopped and frictionally bound against the top surface of the tail-piece; said head portion exceeding in diameter, the diameter of the eye or enlarged part 11 of the key hole slot (see Figs. 3 and 5).

Said clamp screw 23 is provided with an internally screw threaded axial bore 26. Threaded into and through said bore 26 is an adjusting screw 27 having a head 28 at its upper end by which it can be manipulated. The lower end 29 of the adjusting screw 27 is caused to abut or bear against the bottom arm 17 of the bell-crank lever (see Fig. 3).

When the string tensioning devices is assembled with and affixed to the tail-piece in the manner and position above described, it will be noted that the same lies wholly within the confines of the free forward end of said tail-piece; furthermore, it will be noted that the base plate 13 of the device is firmly abutted throughout its entire length against the body of the tail-piece, so as to be firmly held tightly against the latter from its front to its rear end, whereby all tendency to vibration relative to the tail-piece is avoided.

In the use of the string tensioning device, a string 22 being anchored by its ball or anchor piece 21 to the bifurcate or forked hook element 20 of the bell-crank lever, the string may be tensioned by turning down the adjusting screw 27 through the clamp screw 23 so as to cause the extremity 29 of the former to engage and thrust downwardly upon the bottom arm 17 of the bell-crank lever, thereby rocking the latter on its

pivot or fulcrum pin 18 so as to swing rearwardly the upstanding arm 16, thus stressing the string longitudinally to a desired nicely adjusted and precise degree of tension, whereby to obtain extremely accurate tuning of the string.

It will be observed that the string tensioning device of this invention is very compact, and of minimum bulk, without parts projecting endwise from the inner extremity of the tail-piece, so that but limited portions thereof are exposed to view, with the result that a very neat and sightly appearance is assured, and yet all the functional advantages being available and subject to easy and quick operation.

Having now described my invention, I claim:

In combination with the tail-piece of a stringed musical instrument, said tail-piece having a key-hole slot formed by an eye end and a slot end forwardly extending therefrom, of a string tensioning device comprising a base plate having a screw-threaded opening adjacent its rear end, a bell-crank lever pivoted to the forward end portion of said base plate, the upstanding arm of said bell-crank lever comprising a thin blade-like body portion of less thickness than the width of said slot end of the tail-piece key-hole slot, said upstanding arm of the bell-crank lever terminating in a laterally enlarged bifurcate string anchoring hook element, and the horizontal arm of the bell-crank lever being disposed to extend rearwardly beneath said base plate to underlie the screw threaded opening of the latter, the device being adapted to be applied to said tail-piece by passing said upstanding arm and its hook bifurcate element upwardly through the eye end of said key-hole slot to abut the base plate against the underside of said tail-piece, and whereupon shifting said base plate forwardly to move said blade-like body portion of the upstanding arm of the bell-crank lever into the slot end of said key-hole slot with the base plate engaged throughout its length with the underside of the tail-piece and its screw threaded opening aligned with the eye end of the key-hole slot of the latter, a headed clamp screw adapted to be passed downwardly through said eye end of the tail-piece key-hole slot to enter the screw threaded opening of the base plate, said clamp screw having an internally screw-threaded axial bore, and a manipulatable adjusting screw threaded through said clamp screw bore to bear upon and actuate said bell-crank lever.

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