May 14, 1929. H. V. ROCKWELL 1,713,005

VIOLIN

Filed April 20, 1928

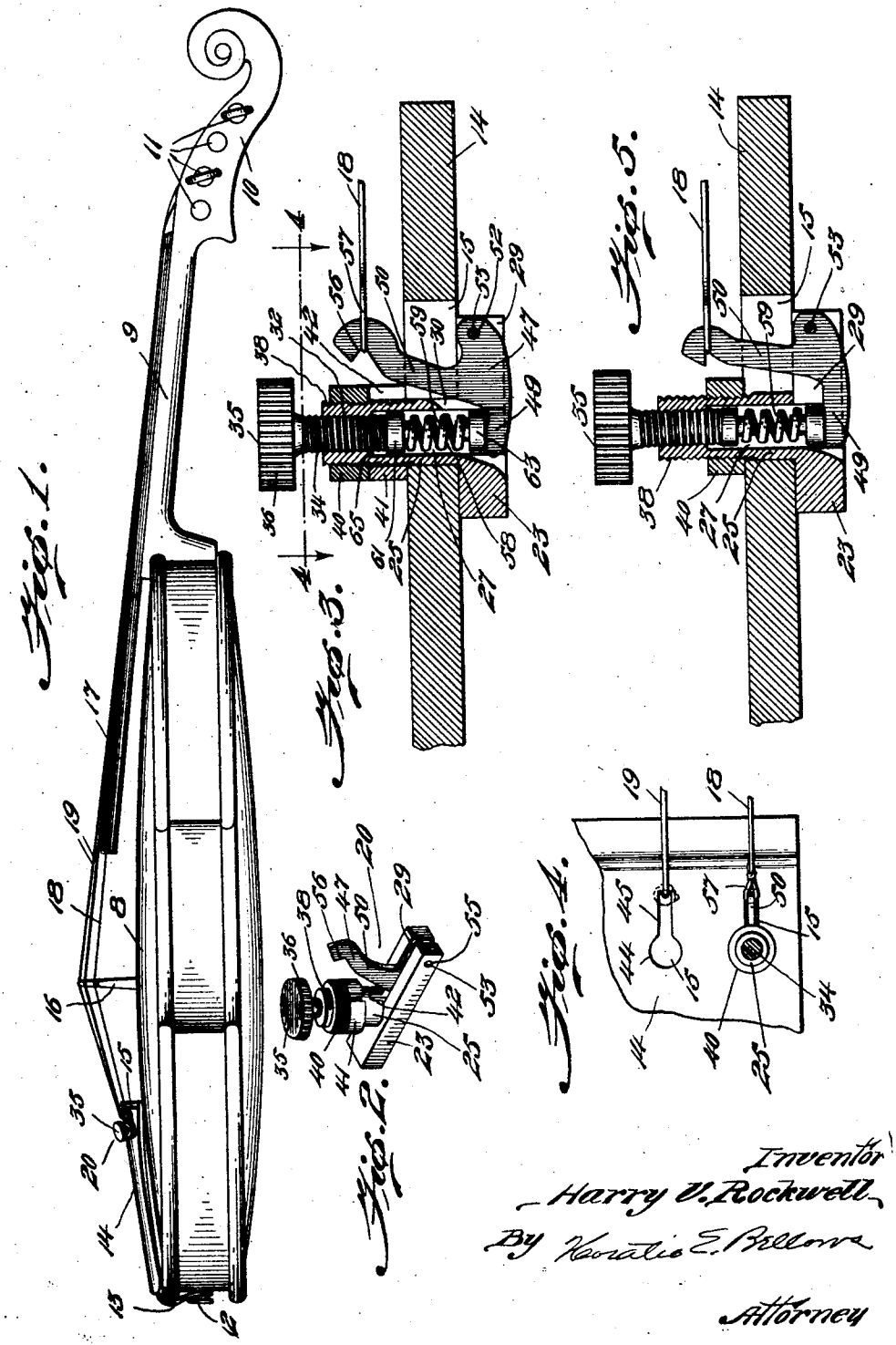


Fig. 1.

Fig. 3.

Fig. 5.

Fig. 2.

Fig. 4.

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UNITED STATES PATENT OFFICE.

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VIOLIN.

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My device is intended for use upon violins, and particularly upon instruments wherein the E string is of steel or metal. The absence of stretch or flexibility in steel strings as contrasted with gut strings makes the playing of the former extremely difficult, and tends to cut the fingers of the operator in "trilling" or special execution. Furthermore this metal string is normally harsh and strident relatively to gut strings. A more serious disadvantage is that the steel string causes an excessive longitudinal strain of the violin body or box, causing warping and opening of the joints of the latter when the string is tensioned to a high pitch. This excessive longitudinal strain furthermore impedes and lessens the vibration of the box and of all the strings whereby the resonance of the entire violin is impaired; the instrument becomes unbalanced, and its tonal quality impaired.

The essential objects of my invention are to overcome the disadvantages hereinabove set forth; to improve the quality, tone, and resonance of the entire instrument in distinction from the subordinate purpose of merely tuning the string; to insure a broad, full, clear and rich tone; to enable a more accurate and speedy tuning of the wire string to the pitch as well as to make fingering faster and easier; and to attain these ends in a simple, inexpensive, and inconspicuous structure peculiarly adapted to facile incorporation in the instrument.

My invention consists broadly in subjecting the steel E string to continuous yielding tension; in the means for effecting this end, and in means for controlling the degree of yielding tension. My invention consists further in the features and details of construction hereinafer described.

In the accompanying drawings which form a part of this specification, and in which is shown merely a preferred form of embodiment of my invention

Figure 1 is a side elevation of a violin in which my tuning device is incorporated,

Figure 2, a isometric view of my device,

Figure 3, a central longitudinal section of the same and the adjacent portion of the tail piece in which it is mounted,

Figure 4, a section taken on line 4—4 of Figure 3, and

Figure 5, a section corresponding to that of Figure 4 of a modified form of my invention.

Similar reference characters indicate similar parts throughout the views.

In the drawings 8 represents the box, 9 the neck, 10 the peg box, 11 the pegs, 12 the end pin, 13 the tail gut, 14 the tail piece, 15 the string openings, 16 the bridge, 17 the finger board, 18 the E string, and 19 the remaining strings of any usual or preferred violin wherein my tuning device 20 is herein shown incorporated.

My device includes a casing detachably mounted in the string opening 15 corresponding to the E string, and comprises an oblong base portion 23 and a vertical body portion 25. Both the base portion and body portion are provided with a continuous chamber 27 to which extends a central longitudinal slot 29, which in this instance extends also through the lower part of the body portion or casing as at 30. The top of the body portion is centrally provided with a vertical threaded hole 32 extending to the chamber 27 to receive therethrough the threaded shank 34 of an adjusting screw 35 having a milled head 36. Upon the exterior of the body portion is a thread 38 engaged by a milled clamping nut 40 resting, in this instance, upon a spacing ring 41 which in turn rests upon the tail piece and is provided with a vertical slot 42. The upper face of the base portion 23 is held tightly against the lower face of the tail piece 14 by tightening the nut 40. The body portion fits in the circular portion 44 of the string opening 15 of the E string, while the elongated portion 45 of said opening accommodates a portion of a spring tensioned lever 47.

This lever is formed throughout of thin metal and is of the angular or bell crank lever type comprising a substantially horizontal arm 49 and an upright arm 50. The lever is provided near the junction of the arms with a perforation 52 to loosely receive therethrough a pintle 53 frictionally held in a transverse hole 55 extending through the bifurcated end of the base portion 23 of the casing. The lever arm 50 is provided near its top with a notch 56 to receive the looped end 57 of the E string.

In the chamber 27 is a resilient member 58

comprising a helical spring 59 having, in this case, loosely seated in its ends, upper and lower bearing buttons 61 and 63. The button 61, which normally engages the body portion of the casing at the upper end of the chamber 27, as at 65, is in Figure 3 shown engaged by the adjusting screw 35, while the lever 49 supports the button 63.

In the modified form shown in Figure 5 the spacing ring 41 is omitted, as well as the portion of the slot 29 indicated at 30 in the casing body.

My device may be disengaged from the tail piece, if desired, by removing the screw 35, clamping nut 40, and, if present, the spacing ring 41; since the body portion 25 of the casing has a loose or sliding fit in the portion 44 of the string hole 15.

In tuning up the E string its corresponding peg 11 is turned. If further graduations of tone are necessary or desired screw 35 may be turned.

The resilient member 58, which is the essence of my invention, and which is operative either with or without the presence of the screw 35, acts upon the E string to continuously cushion the same or impart thereto a continuous yielding or flexible tension. This flexibility relieves the excessive longitudinal strain upon the steel E string which heretofore lessened the vibration of the box and all strings. Thus the resonance of the entire violin is increased, and an increasingly broad, full, clear, non-strident, and rich tone produced. The metallic E string when tightened to concert pitch exercises a greater longitudinal strain upon the instrument than do the gut strings, thus tending to warp the whole body and open the joint between the box and neck thereof. This strain would be present to a damaging degree when the operator's finger depresses the string tuned at concert pitch were the resilient member 58 absent. The latter relieves the strain without lowering the correct pitch. Furthermore the flexibility of the E string due to the steel member 58 lessens the abrasive or cutting effect of the string upon the operator's fingers.

Without departing from the spirit of my invention other modes of applying the principle thereof may be employed instead of the one explained, change being made as regards the construction herein disclosed, provided the means stated by any of the following claims, or the equivalent of such stated means, be employed. I do not purpose limiting the patent granted on this application otherwise than necessitated by the prior art.

I claim:—

1. In a violin, the combination with the steel string and the tail piece, of a casing detachably mounted in the tail piece, a lever supported by the casing and pulled by the string, and a resilient member in the casing abutting against the lever for relieving the pull of the string.

2. In a violin, the combination with the string and the tail piece provided with an opening, of a casing comprising a base portion below the tail piece, and a hollow body portion extending through the opening provided with an external thread, a clamping nut engaging the thread above the tail piece, a resilient member in the body, and a lever pivotally mounted in the base engaging the resilient member and the string.

3. In a string tensioning device for a violin, a casing comprising a base portion, and hollow body portion upon the base portion provided with a hole in its top, a vertically disposed resilient member seated in the body portion, a lever pivotally supported by the base portion comprising an arm engageable with the lower end of the resilient member and an arm disposed at an angle thereto, and an adjusting screw in the hole engageable with the top of the resilient member.

4. In a string tensioning device for a violin, a casing comprising a base portion provided with a longitudinal slot, and an upright body portion provided with a chamber communicating with the slot, a resilient member in the chamber, a pintle in the base extending across the slot, and a lever provided with a perforation to receive the pintle comprising an arm engageable with the spring, and an arm disposed at an angle to the first arm adapted for the reception of a string.

5. In a string tensioning device for a violin, a casing comprising a base portion provided with a longitudinal slot, and an upright body portion upon the base portion above the slot, a resilient member in the body portion registering with the slot, a pintle near one end of the base extending across the slot, and a bell crank lever pivotally supported by the pintle comprising a substantially horizontal arm within the slot engageable with the spring, and an upright arm exterior of the body portion provided with a notch.

6. In a string tensioning device for a violin, a casing comprising an oblong horizontal base portion and an upright body portion intermediate the length of the base portion provided with an external thread, a resilient member in the body portion, a lever pivotally supported upon the base portion near its end comprising a substantially horizontal arm engaging the resilient member, and an upright arm exterior of the body portion, and a clamping nut engaging the thread upon the body.

In testimony whereof I have affixed my signature.

HARRY V. ROCKWELL.