VIOLIN STRING TUNING AND TENSIONING PEG

Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5
A violin string tuning and tensioning peg having opposed, freely tiltable and self-aligning pressure discs,

Conducive to a better understanding of the invention, it may be well to point out that the peg boxes of violin have opposed and spaced legs, or side walls, that are angularly inclined with reference to one another. Furthermore, due to the fact that the individual side walls usually vary in cross-sectional thickness, their inner and outer surfaces are also non-parallel.

When a conventional metal tuning peg having a telecopedically interfitted two-piece shaft, provided with opposed and parallel pressure discs formed integral with each shaft half, is mounted in such a peg box its frictional pressure varies as the peg is rotated in tensioning the string anchored thereon.

This is due to the fact that the pressure discs cannot be aligned flat against the peg box leg surfaces, since such surfaces are non-parallel, while the pressure disc faces are rigidly positioned at 90° to the peg axis. Normal string vibration causes such pegs to slip, necessitating frequent re-tuning of the instrument.

The primary object of the invention, therefore, is to provide a metal violin string tuning and tensioning peg having opposed, freely tiltable and self-aligning pressure discs that will always lie flat against the inner and outer surfaces of the peg box leg with which they are engaged, while the peg is rotated 360°.

Another object is to provide a violin string tuning and tensioning peg of the type stated whose opposed pressure discs will provide smooth and positive frictional pressure in all possible rotational positions, thus assuring that its attached string will be maintained in perfect tune after hours of playing.

A further object is to provide a tuning peg of the type stated that can be quickly and permanently mounted in any violin peg box.

These, and other objects of the invention, will become apparent from a reading of the following specification and claim, together with the accompanying drawing, wherein like parts are referred to and indicated by like reference numerals and wherein:

FIGURE 1 is a perspective view of a conventional violin neck showing the string tuning and tensioning pegs that are the subject of the invention mounted in the peg box thereof;

FIGURE 2 is an enlarged elevational view of a portion of a peg box, showing one of the string tuning and tensioning pegs mounted thereon;

FIGURE 3 is an exploded view of the string tuning and tensioning peg illustrated in FIGURE 2;

FIGURE 4 is a perspective view of the toothed pressure disc in its unmounted condition;

FIGURE 5 is a front elevational view of the thumb button section of the peg upon which the pressure disc illustrated in FIGURE 4 is mounted; and

FIGURE 6 is an enlarged exploded view of the peg shaft and the sleeve tiltable mounted on the square end thereof, illustrated in FIGURE 3.

Referring more particularly to the drawings, there is seen in FIGURE 1 a conventional violin neck 11 showing the violin string tuning and tensioning pegs, that are the subject of the invention, broadly indicated by reference numeral 10, mounted through the peg box 12 thereof.

As explained hereinafore, the conventional peg box 12 has two spaced side walls, 20, 21 which are inclined toward one another, in non-parallel relation, as seen in FIGURE 2. At the same time the inner and outer faces of each leg are usually not parallel, making for a situation wherein it is impossible for pressure discs rigidly mounted on a shaft journaled through the peg legs 12 and 14, at 90° to the longitudinal center-line of the peg box 12, to bear flat against the leg faces.

The construction of the violin string tuning and tensioning peg 10 disclosed hereinafter provides a device, as again seen in FIGURE 2, whose pressure discs 23 and 26 will automatically tilt to align themselves parallel to both the inner and outer faces, respectively, of such a peg box leg 14, as the peg is rotated through 360°.

As seen in FIGURE 3, reference numeral 15 indicates the peg shaft having a square end anchoring bore 16 therethrough. The shaft has a cylindrical bearing 17 at one end thereof, while the other end 19 is square in cross-section and adapted to telescopically interfit a mating square bore 31 in the thumb button housing 28, as explained hereinafore.

The shaft square section or tongue 19 has a threaded axial bore 20 and terminates at a shoulder 18, formed integral with the shaft.

An inclined notch or slot 21 is cut in each corner edge of the square end 19, at the shoulder 18, as is most clearly seen in FIGURE 6.

A short sleeve 22 having a first pressure disc 23, formed integral therewith, is slidably mounted on the square shaft end 19 through a square central bore adapted to closely mate with the square shaft end 19. A thin washer 24 is seated on the sleeve ahead of the pressure disc 23.

The housing 28 has a tapered configuration, with a cylindrical bearing section 30 at its smaller end and thumb button 33 fitted into its larger end through a square post 37.

Reference numeral 29 indicates an inclined toothed ring positioned on the inner end of the housing bearing surface 30.

The toothed ring 29 is inclined to the axis of the bearing 30 at an angle of approximately 60°.

Reference numeral 26 indicates a second pressure disc having a tapered toothed bore 27, adapted to loosely fit over the bearing 30 and mate with the teeth of the ring 29.

To mount the tuning peg 10 in the peg box 12, a straight bore is drilled across the peg box through both legs 13 and 14, at right angles to the longitudinal center-line of the peg box.

The thumb button post 37 is filled into its mating square socket bore 32, in the housing 28. The second pressure disc 26 is mounted on the housing bearing 30 with its tapered teeth 27 in mesh with the toothed ring 29. A nylon washer 25 is then slipped over the bearing 30 against the pressure disc 26, as seen in FIGURE 2.

The bearing section 30 of the so assembled housing is inserted in the bore of leg 14 with the washer 25 seated against the outer surface of the leg 14.

The shaft 15 is then mounted across the peg box with its square end 19 telescopically interfitted in the square bore 31 of bearing 30 and its cylindrical bearing end 17 fitted in the bore through leg 13, as again seen in FIGURES 1 and 2. The washer 24 will now rest against the inner face of the leg 14.
A long machine screw 35 having a washer 36 mounted at the head end thereof is passed through the bore 34 of the thumb button 33, the bores 32 and 31 of the housing 28, into engagement with the threaded bore 20 of the shaft 15 and drawn up tight.

Study of FIGURE 2 will show that the screw 35 acts to draw the pressure disc 23, mounted on the square shaft section 19, toward the inner surface of the peg box leg 14, while the pressure disc 26, which is meshed with housing teeth 29, is urged against the outer surface of said leg. Thus, by rotating the screw 35 either clockwise or counterclockwise the amount of frictional drag against rotation of the shaft 15, relative to the leg 14, created by the pressure of the discs 23 and 26 can be varied, to properly tension and hold the violin string, attached to the shaft of the peg 10, in tune.

The nylon washers 24 and 25 act as smooth bearing surfaces for the pressure discs 23 and 26, respectively, and prevent gouging of the leg surfaces by rotation of the discs, since the washers remain stationary while the discs are rotated.

Since the pressure disc teeth 27 mesh with the housing teeth 29, the disc 26 is in effect all of a piece with the housing 28 and must turn therewith. However, the teeth permit the pressure disc 26 to freely tilt relative to the axis of the shaft 15, so that it may align itself parallel to the outer surface of leg 14 as the thumb button and shaft are rotated, as again seen in FIGURE 2.

Similarly, the notches 21 of the square shaft section 19, seen most clearly in FIGURE 6, permit the pressure disc 23 to freely tilt and maintain itself in parallel alignment with the inner surface of leg 14, while at the same time being in effect of a piece with the shaft 15.

Since both pressure discs always rest uniformly flat against the inner and outer surfaces of the peg box leg 14, no matter how mis-aligned the leg surfaces may be, the tension created by rotation of the peg 10 is uniform and permanent, and not effected by the vibration created by playing the instrument.

It will now be clear that there is provided a device which accomplishes the objectives heretofore set forth.

Claim:
1. In combination with a violin peg box of the type having spaced and angularly opposed first and second side walls, or legs, with axially aligned peg mounting bores therethrough, a violin string tuning and tensioning peg, comprising:
   (a) a hollow housing having a thumb button seated at one end thereof and a cylindrical bearing portion at the opposite end thereof adapted to be journaled in the bore of the first peg box leg;
   (b) said bearing portion having an angularly inclined, toothed, circular shoulder at its inner end and a square bore therethrough;
   (c) a first pressure disc, having a toothed bore therethrough, slidably fitted over the housing bearing portion with its bore teeth meshed with those of the bearing shoulder, for positive rotation therewith, the so engaged pressure disc being free to tilt radially relative to said bearing axis;
   (d) a string tensioning shaft having a diametric string anchoring bore therethrough;
   (e) said shaft also having a cylindrical bearing portion at one end thereof, adapted to be journaled in the bore of the peg box second leg, and a square tongue at the other end thereof, adapted to telescopically interfit the square bore of the thumb button housing bearing journaled in the peg box first leg bore;
   (f) said shaft tongue having a threaded axial bore therein;
   (g) a circular shoulder located on the shaft at the inner end of the tongue;
   (h) said square tongue having angularly inclined notches cut in each edge thereof, at the shoulder;
   (i) a second pressure disc, having a square bore therethrough, loosely fitted on the tongue, for positive rotation therewith, and freely tiltable radially of the axis thereof, relative to the shoulder, at the notches; and,
   (j) a headed pressure screw extending through the thumb button and button housing with its threaded end engaged with the threaded bore of the shaft tongue, operable, upon rotation, to draw the tongue into the housing bearing bore and pull the first and second pressure discs against the outer and inner faces, respectively, of the peg box first leg, to create a frictional drag against said leg surfaces, which acts to resist rotation of the string anchoring shaft; the so engaged pressure discs being free to tilt relative to the axis of the shaft, as the shaft is rotated through 360°, to maintain themselves in parallel alignment with the outer and inner faces of the peg box first leg, to provide uniform frictional drag against rotation, in all possible positions of the shaft rotating thumb button.

References Cited

UNITED STATES PATENTS
1,128,835 2/1915 Bailey et al. 84—305
1,339,418 5/1920 Pochland 84—305
1,579,987 4/1926 Wicke 84—305

RICHARD B. WILKINSON, Primary Examiner
J. F. GONZALES, Assistant Examiner