N. C. HALE.

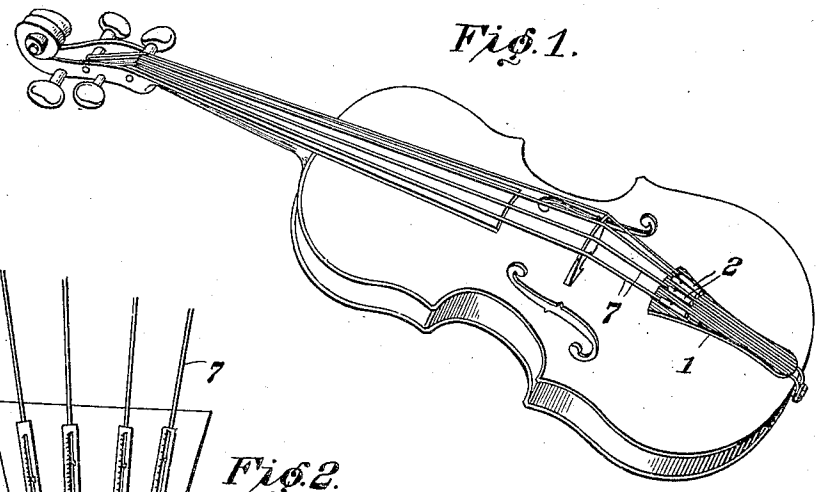
VIOLIN TAILPIECE.

APPLICATION FILED JUNE 18, 1908.

936,624.

Patented Oct. 12, 1909.

Fig. 1.



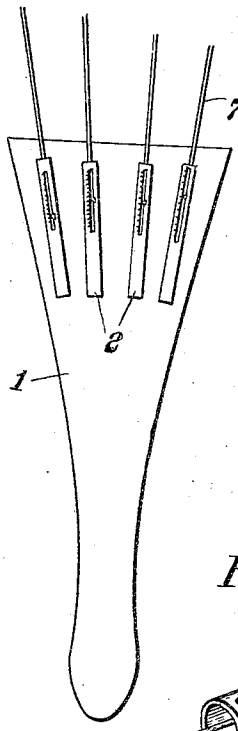


Fig. 2.

Fig. 3.

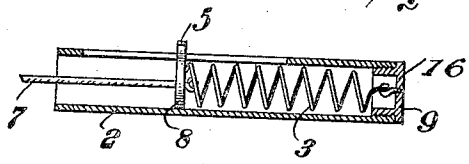


Fig. 4.

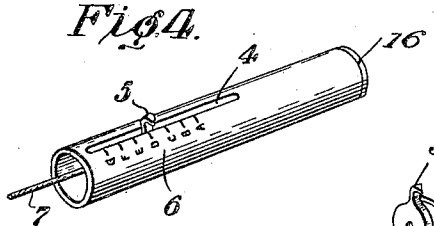
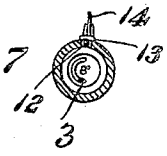


Fig. 7



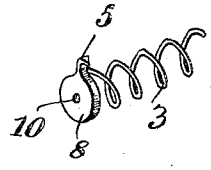
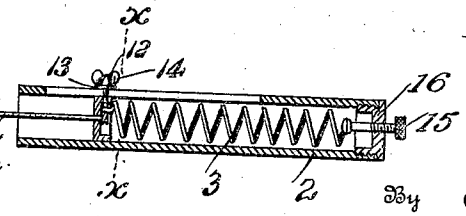


Fig. 5.

Fig. 6.



Witnesses

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UNITED STATES PATENT OFFICE.

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VIOLIN-TAILPIECE.

936,624. Specification of Letters Patent. Patented Oct. 12, 1909.

Application filed June 18, 1908. Serial No. 439,183.

To all whom it may concern:

Be it known that I, NOAH C. HALE, citizen of the United States, residing at Boatright, in the county of Calloway and State of Kentucky, have invented certain new and useful Improvements in Violin-Tailpieces, of which the following is a specification.

The present invention in its specific application is designed for violins and like stringed musical instruments, but obviously may be adapted to musical instruments of any kind employing strings as the sound producing means.

The invention enables the unskilled to tune an instrument to any desired pitch, the latter being determined by a scale, each string having a tension device and a scale in coöperative relation therewith to determine the tension corresponding to the required tone.

The invention is particularly adapted to instruments of the violin type, having a tail-piece to which the strings are attached and is illustrated in this adaptation in the accompanying drawings, in which:

Figure 1 is a perspective view of a violin provided with a tail-piece embodying the invention. Fig. 2 is a top plan view of the tail-piece. Fig. 3 is a central longitudinal section of a tube or barrel. Fig. 4 is a perspective view of a tube or barrel. Fig. 5 is a perspective view of an end portion of a tension spring, showing the disk to which the musical string is attached and which disk is provided with the pointer. Fig. 6 is a detail view of a modification, showing means for securing the disk or like part in the adjusted position. Fig. 7 is a transverse section on the line *x—x* of Fig. 6.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The tail-piece 1 may be of any construction designed according to the particular make and style of instrument for which intended. The tail-piece is provided with a tensioning device and scale for each string. The tensioning device may be fitted to the tail-piece in any approved manner so as not to be in the way and yet admit of attaining the objects of the invention and permitting of access being readily had to the parts for any purpose.

Each tensioning device consists of a tube or barrel 2 and spring 3 located therein and consisting of a spiral formed of wire of selected gage best adapted for the purpose. A slot 4 is provided in a side of the tube or barrel for the pointer 5 to move in. A scale 6 is provided at one side of the slot 4 and cooperates with the pointer 5 to indicate the tension of the spring 3 and the musical string 7 connected thereto. The pointer 5 is carried by a disk or like part 8 movable in the tube or barrel 2 and having one end of the spring 3 securely attached thereto. The opposite end of the spring 3 is secured to the end of the tube or barrel in any manner. As shown, a cap 9 is fitted to an end of the barrel and closes the same and the end of the spring 3 is connected thereto. The disk or bar 8 has an aperture 10 through which the string 7 passes, said string being knotted in the accustomed way to prevent its withdrawal through the opening 10 when subjected to tension. Normally the pointers 5 of the several tensioning devices stand at zero and after the strings have been connected to the parts 8 and stretched by the tuning pins or keys, the springs 3 are subjected to tension, the degree of tension being indicated by the pointer 5 and scale 6. The tension of the spring 3 is such that when an A string is tightened to move the pointer to the letter A of the scale, said string is in proper tune. When an E string is stretched so that the pointer 5 of the tensioning device is opposite the letter E of the scale 6 it is known that said string is in proper tune. Each string is tightened until the scale of its tensioning device indicates the letter or mark determined upon. It will thus be understood that it is not necessary to try the several strings to harmonize the tones in tuning, the instrument being tuned when the several strings are stretched or tightened so that the tensioning device connected therewith indicates the points to which the tightening should be effected.

It is to be understood that the invention may be applied to mandolins, guitars, banjos and like stringed musical instruments having tail-pieces, or even to the strings of other musical instruments by adaptations and modifications which will readily adjust themselves to the skilled artisan.

To prevent movement of the part 8 to which the musical string is attached after the string has been properly stretched or tightened, suitable means are employed to fix the position of the part 8. In Fig. 6, a

threaded stem 12 extends from the part 8 and passes through the slot 4 of the tube or barrel 2 and receives a plate 13 and a thumb nut 14, the plate 13 having a pointer to co-operate with the scale 6 and said plate being clamped against the tube by the thumb nut 14.

The zero-point of the spring 3 may be regulated by means of a screw 15, as shown most clearly in Fig. 6, said screw being threaded into the cap or end 16 closing the tube 2.

Having thus described the invention, what is claimed as new is:

1. In a device as specified, the combination with a tail-piece of an indicator for determining the tension of a string and means for securing said indicator rigidly in adjusted position.

2. In a device as specified, the combination with a tail-piece of means for determining the relative tension of strings extended from said tail-piece and a clamp carried by said tension means for securing the strings in a rigid position.

3. In a device as specified, the combination with a tail-piece of tubes carried by said tail-piece, coil springs arranged in said tubes, strings extended from said springs, and indicators extended from said springs through said tubes to indicate upon scales on said tubes the tensions of said strings.

4. A device as specified comprising a tail-piece a plurality of tubes having longitudinal slots formed in the upper side thereof disposed in the forward end of the tail-piece, scales formed on said tubes adjacent the slots therein, coil springs longitudinally positioned in said tubes and secured at their rear extremities to said tubes, disks carried in said tubes by the forward extremities of said springs, strings secured to said disks and extended therefrom through said tubes, pointers upwardly extended from said disks through the longitudinal slots formed in the upper sides of said tubes, said pointers adapted to co-act with said scales formed upon said tubes for indicating the tension of said springs, thumb nuts positioned upon said pointers, and plates disposed upon said pointers beneath said thumb nuts and adapted to be clamped against said disks rigidly in adjusted position.

In testimony whereof I affix my signature in presence of two witnesses.

NOAH C. HALE.

Witnesses:
V. B. Hillyard,
W. N. Woodson.