

TENSION DEVICE FOR MUSICAL STRINGED INSTRUMENTS.

Patented July 29, 1913.

2 SHEETS—SHEET 1.

Fig. 1.

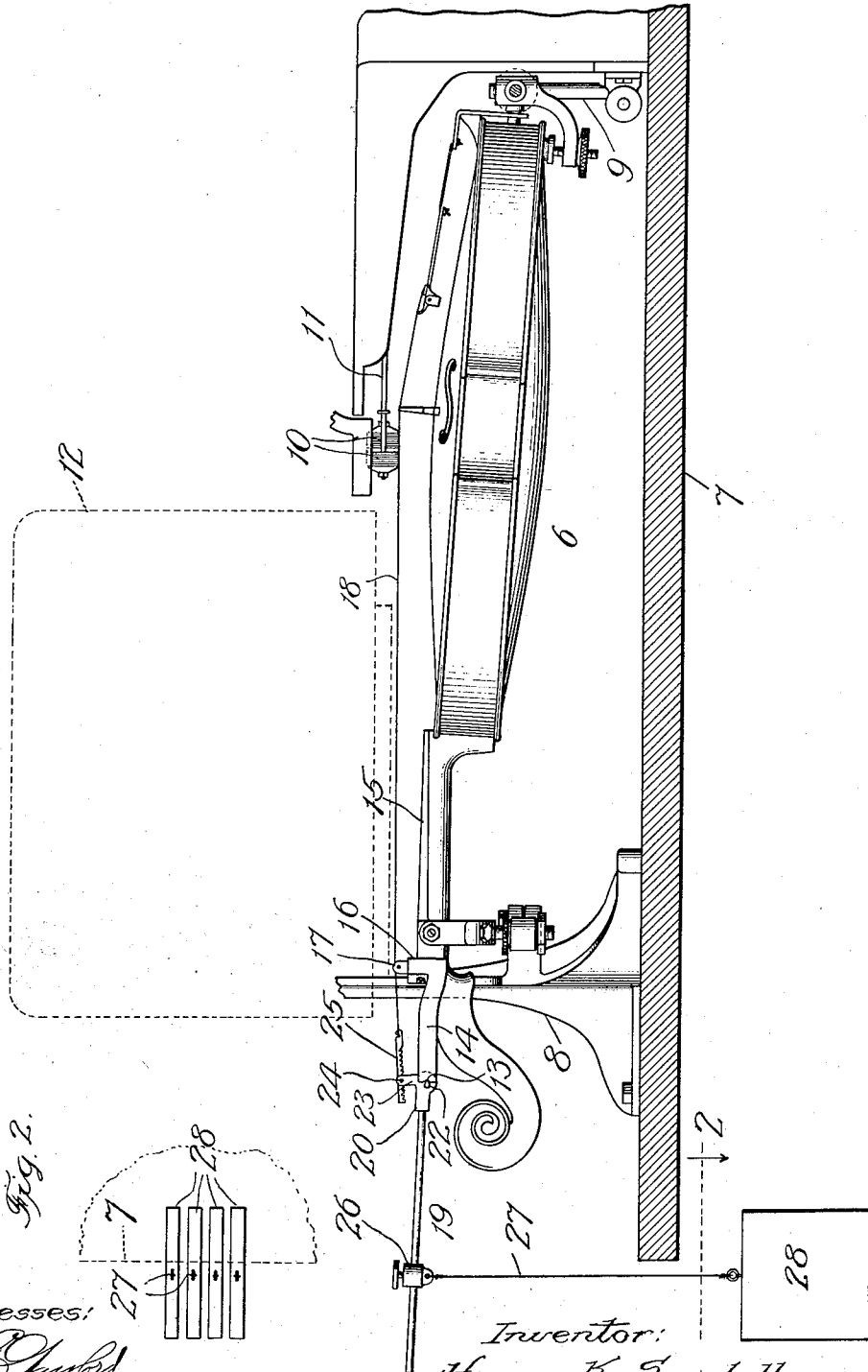


Fig. 2.

Witnesses:

Chas. H. Bull.

Inventor:

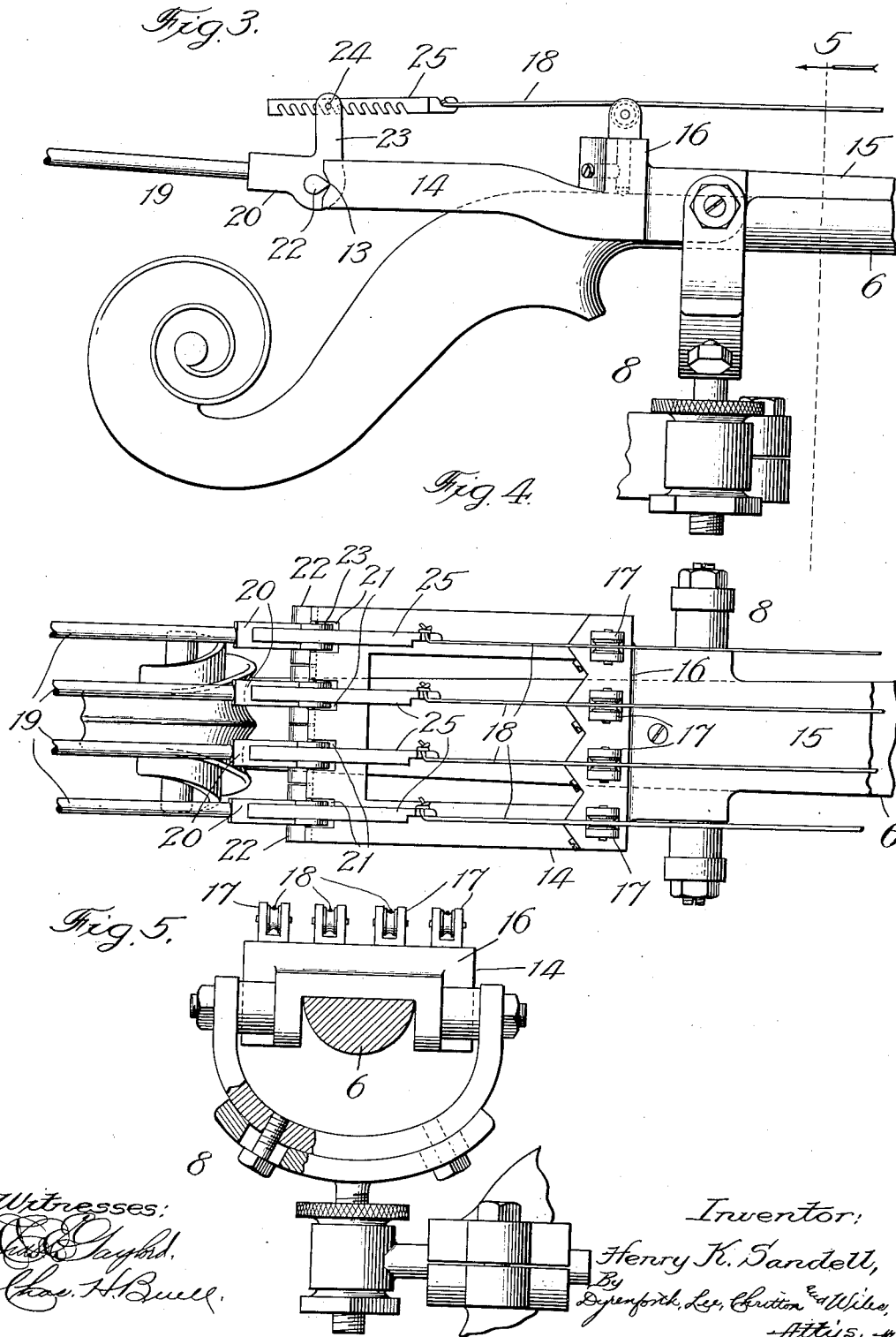
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TENSION DEVICE FOR MUSICAL STRINGED INSTRUMENTS.
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1,068,935.

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2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

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TENSION DEVICE FOR MUSICAL STRINGED INSTRUMENTS.

1,068,935.

Specification of Letters Patent.

Patented July 29, 1913.

Application filed November 14, 1912. Serial No. 731,446.

To all whom it may concern:

Be it known that I, HENRY K. SANDELL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Tension Devices for Musical Stringed Instruments, of which the following is a specification.

The primary object of my invention is to provide automatic means for keeping musical stringed instruments in tune. This object is especially desirable of accomplishment in mechanically or automatically played stringed instruments, whether pianos or instruments of the viol class, because they, and more particularly the latter, soon get out of tune with the relatively-hard usage to which they are subjected and are more liable than not to be in the hands of persons incompetent to tune them. Moreover, for reasons which will be manifest, my invention is not well adapted for use on manually-played instruments of the viol class, though it may be used to advantage on the strings of manually-played pianos, zithers, and the like. However, I have thus far applied it practically to the automatically-played violoncello and to the electric self-playing violin of the United States Letters Patent No. 807,871, granted to me December 19, 1905, and of others which have since been granted to me.

The principle of my invention lies in maintaining the string in tune through the medium of a weight suspended on an end thereof (or, for that matter, on each end thereof) and of the proper mass to hold the open string at the required tension for its normal pitch.

In the accompanying drawing, Figure 1 is a sectional view in side elevation showing my invention applied in its preferred form to an automatically-played violin; Fig. 2 is a section on line 2, Fig. 1, showing the suspended weights; Fig. 3 is a broken view in side elevation, showing on a larger scale than that in Fig. 1, the head and neck-portions of a violin with my invention applied thereto; Fig. 4 is a plan view of the showing in Fig. 3, and Fig. 5 is a broken section on line 5, Fig. 4.

A violin 6 is supported on its back on a bed-plate 7 upon suitable brackets 8 and 9, respectively near its front and rear ends, to

lie in a position somewhat inclined rearwardly from the horizontal; and it is played by sounders 10, one for each string, on rotating shafts 11 depressible to cause the sounders to attack the strings, and by fingering-devices, the casing of which is indicated by dotted representation at 12 in Fig. 1, all as shown and described in the patent hereinbefore enumerated. On the neck near the head of the instrument is rigidly secured to embrace it, a rectangular bracket 14 having a rear tongue 15 extending along and fastened to the top of the neck and containing in its advance-end V-shaped notches 13; and at the "nut" of the instrument rise from the bracket 14 bearings 16 for sheaves over which the violin-strings 18 are stretched. Similar levers 19, one for each string, terminate at their inner ends in heads 20 entering recesses 21 in the forward end of the bracket 14 and containing transverse knife-edged fulcrum-members 22 to work in the notches 13, each head being furthermore provided with a bifurcated arm 23 rendering the lever a bell-crank and containing a stud 24 to form a species of pawl for engaging a rack 25 to which a string 18 is tied at its advance-end and the tension of which holds the lever in its fulcrumed position. A slidingly-adjustable head 26 is carried on the longer arm of each lever, being fastened in adjusted position by a set-screw, as shown, and having suspended from it, as by a flexible medium 27, as wire, or other suitable means, a weight 28.

The violin-strings are tensioned at the racks by the suspended weights acting upon the levers, and the leverage thus exorable for tensioning the strings renders it possible to use weights 28 of comparatively small size and weight. In originally tuning the instrument, each string is stretched by manipulating the proper lever 19 to draw upon the respective rack 25 until the string is brought to its required pitch, and the weight on the lever is adjusted thereon to the position for causing it to exert the leverage necessary for maintaining that tension of the string and its resultant normal pitch. The instrument is thus automatically kept in tune. Under the constant tension of the strings, however, they are more or less liable to permanent stretch, which may eventually result in their be-

coming unduly elongated. Should that ever occur, the excess in length of any string may be quickly and conveniently taken up by changing the engagement of its weighted tensioning lever with another tooth of the respective rack 25 to shorten the latter.

I realize that considerable variation is possible in the details of construction herein shown and described, and I do not intend by illustrating a single, specific or preferred form to limit my invention thereto, my intention being in the following claims to claim protection upon all the novelty there may be in my invention as broadly as the state of the art will permit.

What I claim as new and desire to secure by Letters Patent is:—

1. In a musical stringed instrument, means for keeping a string thereof in tune, comprising a rack to which the string is attached, a lever provided on one arm with a pawl-device and fulcrumed, said pawl device engaging the rack for holding the string under tension, and a weight on the other lever-arm.

2. In a musical stringed instrument, means for keeping a string thereof in tune, comprising a rack to which the string is attached, a lever provided on its shorter arm with a pawl-device and fulcrumed, said pawl device engaging the rack for holding the string under tension, and a weight adjustably supported on the other lever-arm.

3. In a musical stringed instrument means for keeping a string thereof in tune, comprising a rack to which the string is attached, a lever provided on one arm with a pawl-device and fulcrumed, said pawl device engaging the rack for holding the string under tension, a suspending medium depending from the other lever-arm, and a weight on the suspending medium.

4. A musical instrument of the viol class, provided with means for keeping a string under a constant tension, comprising a bracket detachably secured to the instrument near its neck-end, a lever fulcrumed on the bracket and having one arm con-

nected with the adjacent end of the string, and a weight on the other lever-arm.

5. A musical instrument of the viol class, provided with means for keeping a string under a constant tension, comprising a bracket detachably secured to the instrument near its neck-end, a guide-sheave on the instrument near said end, over which the string is stretched, a lever fulcrumed on the bracket and having one arm connected with the adjacent end of the string, and a weight on the other lever-arm.

6. In a musical instrument of the viol class, means for keeping a string thereof in tune, comprising a bracket secured to the instrument, a rack to which the string is attached, a lever fulcrumed on the bracket and provided on one end with a pawl-device engaging the rack to hold the string under tension, and a weight on the other end of the lever.

7. In a musical instrument of the viol class, means for keeping it in tune, comprising a bracket secured to the instrument near its head-end, racks to which the strings are attached, levers fulcrumed between their ends on the bracket and provided on their shorter arms with pawl-devices engaging the racks, a suspending medium depending from and adjustable on the longer arm of each lever, and a weight on each said medium.

8. In a musical instrument of the viol-class, means for keeping it in tune, comprising a bracket secured to the instrument near its head-end and provided in its forward end with recesses and notches, racks to which the strings are attached, bell-crank levers carrying knife-edged fulcrum-members in their angles to work in said notches and having their shorter arms bifurcated and provided with studs engaging the racks, heads adjustably supported on the longer lever-arms, and weights suspended from said heads.

HENRY K. SANDELL.

In the presence of—

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