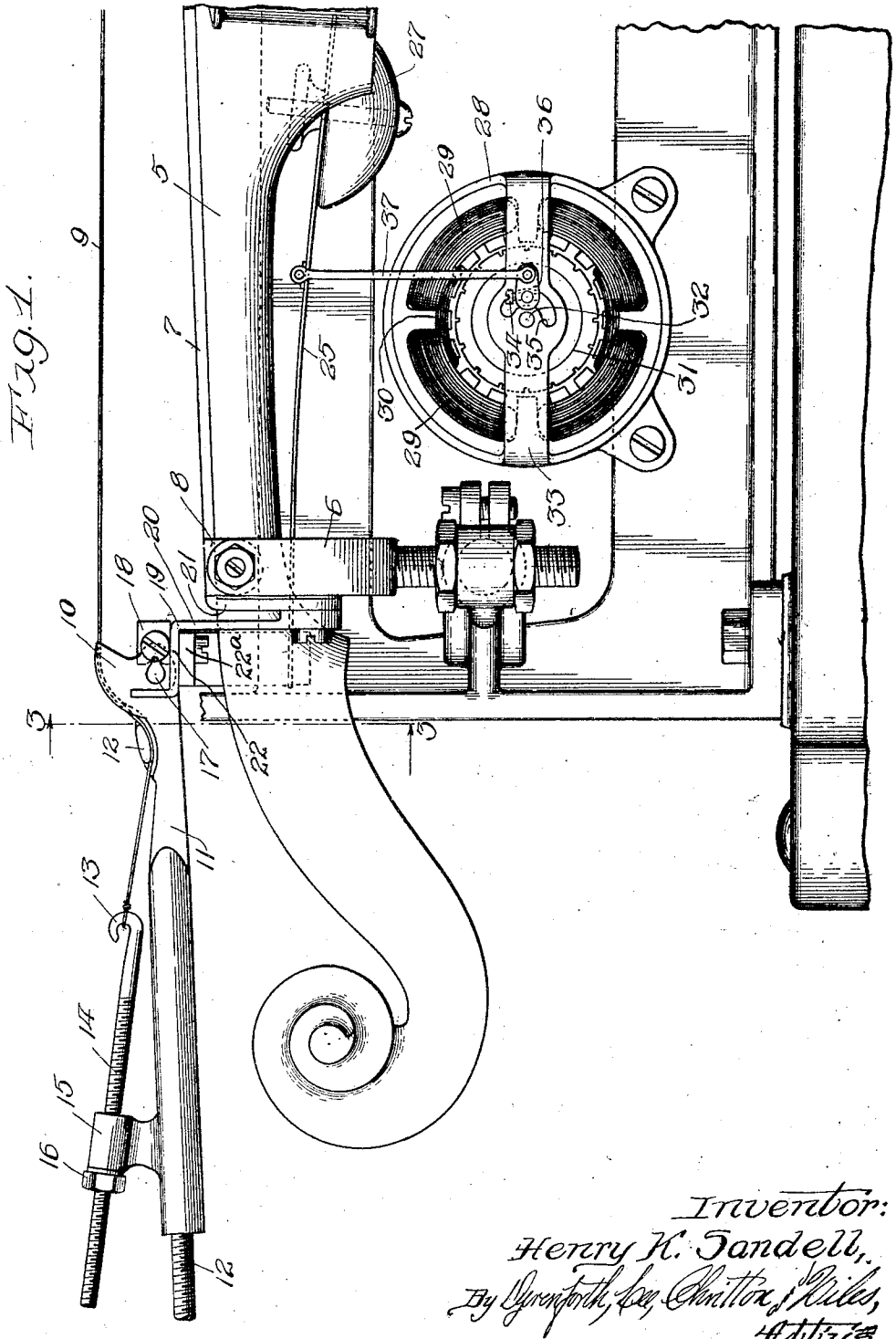
April 6, 1926. 1,579,791

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TREMOLO DEVICE FOR SELF PLAYING STRINGED INSTRUMENTS

Filed July 15, 1922 2 Sheets-Sheet 1



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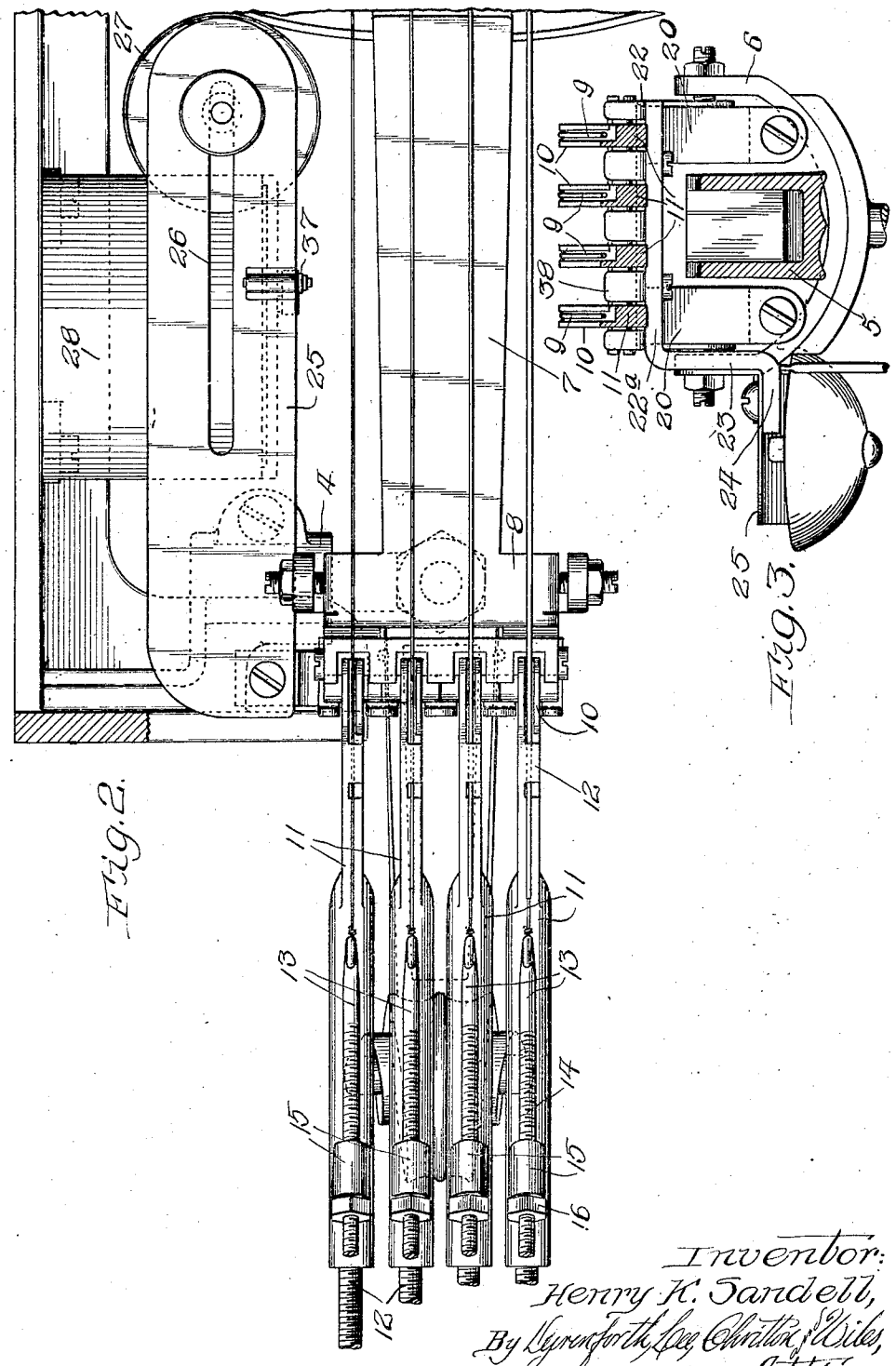


Fig. 2.

Fig. 3.

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Patented Apr. 6, 1926. 1,579,791

UNITED STATES PATENT OFFICE.

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TREMOLO DEVICE FOR SELF-PLAYING STRINGED INSTRUMENTS.

Application filed July 15, 1922. Serial No. 575,196.

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 Tremolo Devices for Self-Playing Stringed Instruments, of which the following is a specification.

The present invention relates to improvements in tremolo devices for use in connection with self-playing stringed instruments of the viol class and more particularly of the character described in my prior Patent No. 855,021, dated May 28, 1907. It will be fully understood from the following description, illustrated by the accompanying drawings, in which

Figure 1 is a side elevation of the head and neck of a violin to which a tremolo device embodying the present invention is attached;

Figure 2 is a plan view of the device shown in Figure 1; and

Figure 3 is a sectional view on the line 3—3 of Figure 1.

In the drawing, the numeral 5 indicates the neck of an instrument of the viol type, for example, a violin. The neck end of the instrument is supported by means of a suitable bracket 6. A flat neck-plate 7 is secured to the upper flattened top of the neck 5 and at its forward end is provided with laterally extending projections 8, the ends of which are bent downwardly on each side of the neck and serve as a connection between the bracket 6 and the neck.

The strings 9 are secured at their forward end to a tension device, United States Patent No. 1,441,702, granted January 9, 1923, on the application of Bertie E. Mills. As described in that application, each string passes over a groove in the convexly curved head 10 of a tension lever 11, then passes under a tongue 12 to a hook 13 to which it is secured. The hook 13 is provided with a threaded end 14 which passes through a sleeve 15 mounted on the lever 11, the position of the hook and the tension of the string being adjusted by means of a nut 16. As described in the application referred to, a weight (not shown) is adjustably supported on the threaded end 12 of the lever 11.

The levers 11 are provided with studs 17 having knife edges engaging notches in a transverse slotted bar 18 which in turn is mounted upon a vibratable support, the direction of vibratory movement of said support being longitudinally of the strings. In the form illustrated, this vibratable support is constructed as a bracket 19 having two depending legs 20, one on each side of the neck, these legs being secured at their lower ends to the downwardly depending portions 21 of the neck-plate 7. At their upper ends the supporting bracket legs 20, which are constructed of resilient metal, are joined to a horizontal plate 22, to which the notched bar 18, which serves as a bearing for the levers 11, is secured. This horizontal portion 22 of the supporting bracket is provided with lips 38 extending upwardly between the levers 11 and serving as spacing means and guides for the latter. When vibratory movement is imparted to the supporting bracket 19, it is communicated through the bearing member 18 to the levers 11 and a corresponding vibration of the strings in their longitudinal direction is effected.

The means shown in connection with the present embodiment of the invention for imparting vibratory movement to the bracket is as follows: To the horizontal portion 22 of the supporting bracket is secured a horizontal bar 22ª which is provided at one side with an extended portion 23 which is bent downwardly and near its end to one side to form a horizontal portion 24 to which a pendular member 25 is secured. This pendular member 25 is preferably formed as a rearwardly extending flat spring provided with a slot 26 in which is mounted an adjustable positioned weight 27. Vibratory movement may be imparted to the pendular member 25 by any suitable means, its resilient nature and the position of the weight 27 determining the natural period of vibration. In the drawings, means for imparting vibratory movement to the member 25 is shown as a small induction motor 28, the stator of which is provided with suitable polar windings 29 and split phase windings 30. The shaft 32 of the rotor 31 passes through an end bracket 33 forming a part of the frame of the motor. The rotor is likewise provided with a pin 34 at some distance from the center, this pin extending through an arcuate slot 35 in the bracket 33. To the pin 34 is rigidly secured, for example, by means of a set-screw, a short link 36. To the end of this link one end of a second

link 37 is pivotally secured, the other end of the link 37 being pivotally secured to the pendular member or spring 25. When the motor 28 is energized by the passage of current controlled, for example, by a perforated note sheet, an oscillatory movement is imparted to the rotor 31, causing vibration of the pendular member 25. The resilient member 25 largely determines the rate of vibration. The vibration is imparted from the pendular member 25 to the support for the supporting bar 18 for the levers 10 and causes the vibration of the supporting bar longitudinally of the strings. The variation in tension produced by this vibration causes the tremolo effect.

While it is preferred to employ the means shown and described for imparting vibratory movement to the member 25, any suitable equivalent means may be employed.

I claim:

1. In a tremolo device for self-playing stringed instruments, means for imparting tension to the strings, and additional means acting longitudinally on the strings for rapidly increasing and decreasing in alternation the tension on the strings in the longitudinal direction thereof.

2. In a tremolo device for self-playing stringed instruments, means for tensioning the strings, and means for imparting to said tensioning means a vibratory movement to vary the force exerted longitudinally of the strings.

3. In a tremolo device for self-playing stringed instruments, means for imparting tension to the string and means for exerting a vibratory force longitudinally of the strings to impart a tremolo effect to emitted sounds.

4. In a tremolo device for self-playing stringed instruments, means for supporting the strings of the instrument, a resilient bracket upon which said support is mounted, and means for causing vibratory movement of said bracket longitudinally of the strings.

5. In a tremolo device for self-playing stringed instruments, means for supporting the strings at one end thereof, said means including tension devices, and means for imparting to the supporting means a vibratory movement longitudinally of the strings.

6. In a tremolo device for self-playing stringed instruments, means for supporting the strings at one end thereof, said means including tension devices for the strings, a resilient bracket upon which said supporting means are mounted, and means for imparting to said bracket vibratory movement longitudinally of the strings.

7. In a tremolo device for self-playing stringed instruments, means for supporting the strings, a bracket upon which said supporting means are mounted, said bracket being vibratable longitudinally of the strings, and a pendular member connected to said bracket for imparting vibration thereto.

8. In a tremolo device for self-playing stringed instruments, means for supporting the strings, a bracket upon which said supporting means are mounted, said bracket being vibratable longitudinally of the strings, and a weighted vibratory spring secured to said bracket for imparting vibratory movement thereto.

9. In a tremolo device for self-playing stringed instruments, means for supporting the strings, a bracket upon which said supporting means are mounted, said bracket being vibratable longitudinally of the strings, a spring secured to said bracket, and means for imparting vibration to said spring.

10. In a tremolo device for self-playing stringed instruments, means for supporting the strings, a bracket upon which said supporting means are mounted, said bracket being vibratable longitudinally of the strings, a spring secured to said bracket, a weight adjustably positioned on said spring, and means for imparting movement to the spring.

11. In a tremolo device for self-playing stringed instruments, means for supporting the ends of the strings, a resilient bracket to which said supporting means are secured, said bracket being vibratable longitudinally of the strings, a vibratory member comprising a weighted spring, means for imparting movement thereto, and a plate rigidly connecting said vibratory member to said resilient bracket to cause vibration of the latter.

12. The method of producing a tremolo effect in a stringed instrument of the viol type which consists in varying the position of the tension device with which the strings are connected and thus varying the direct longitudinal tension applied to the strings during the emission of sound therefrom.

HENRY K. SANDELL.