R. KNAFFL.

Guitars.

No. 134,679. Patented Jan. 7, 1873.

Fig. 1.

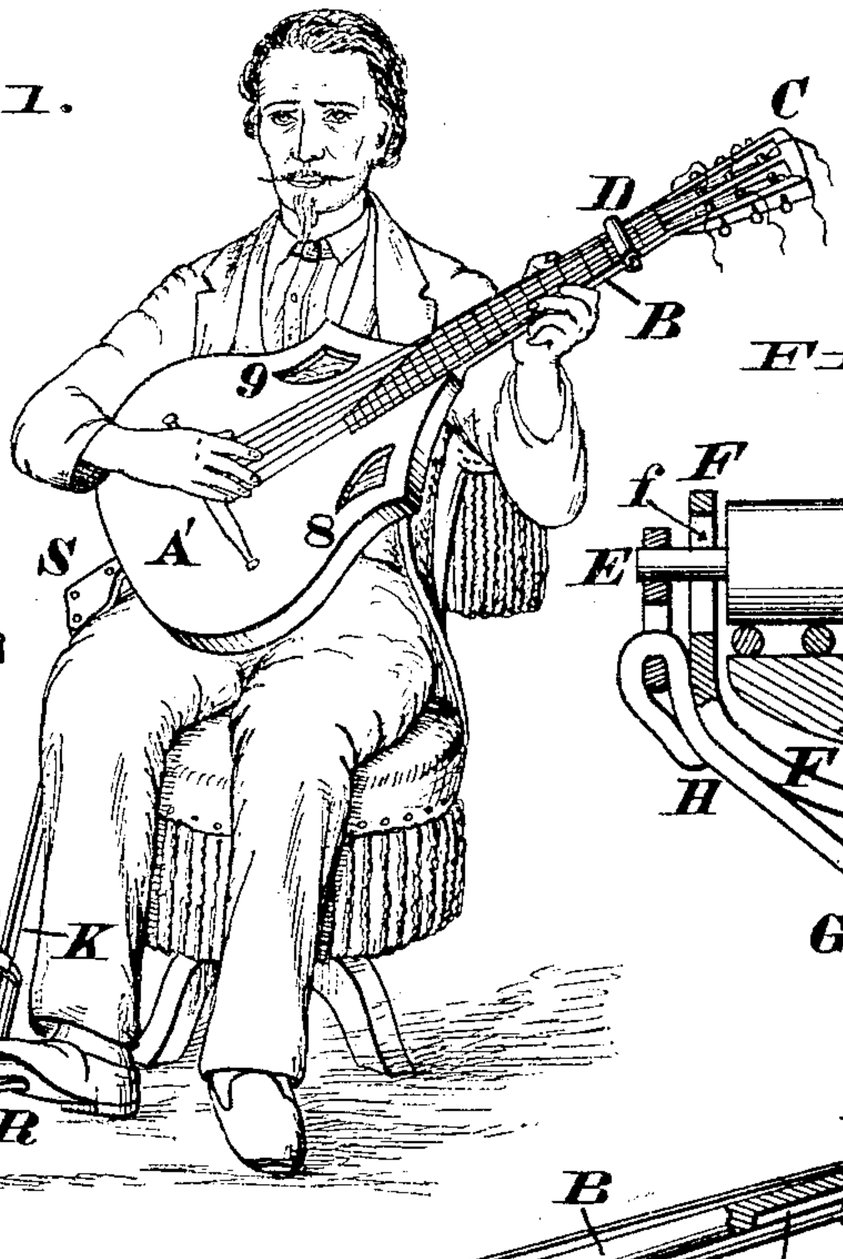


Fig. 3.

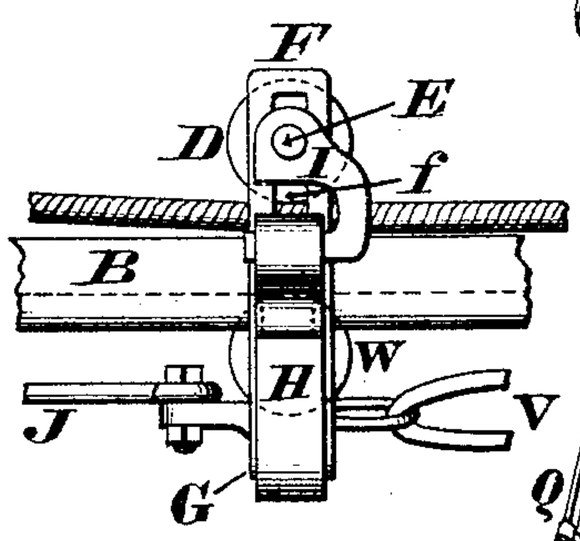


Fig. 4.

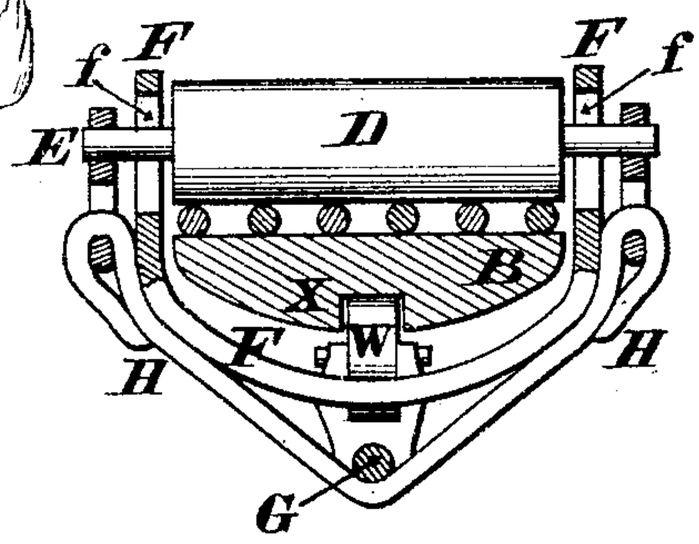


Fig. 2.

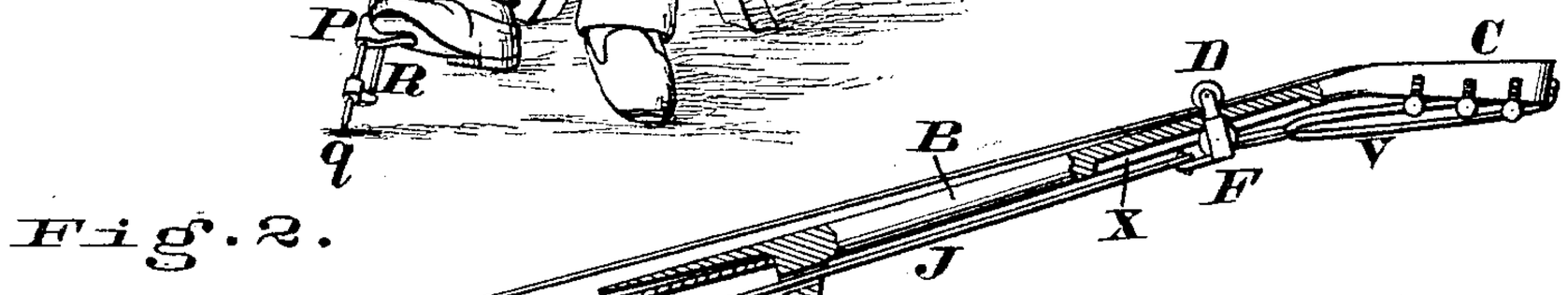


Fig. 5.

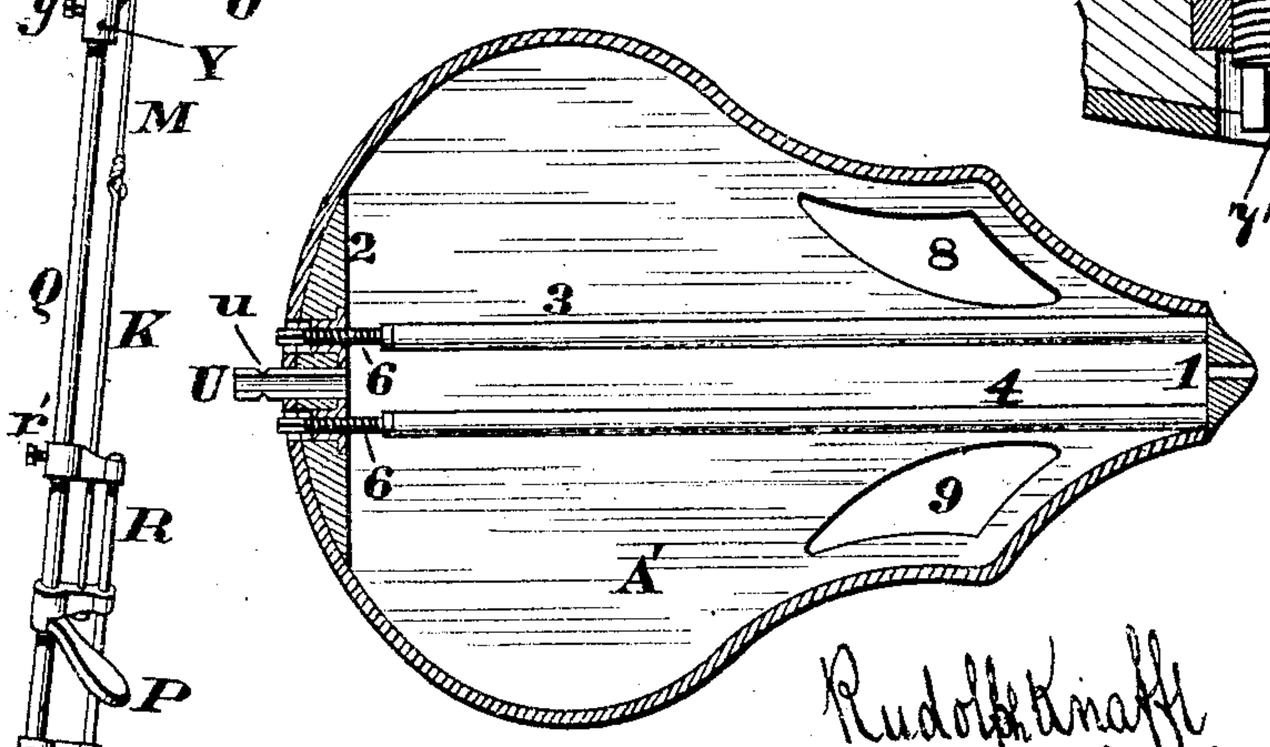
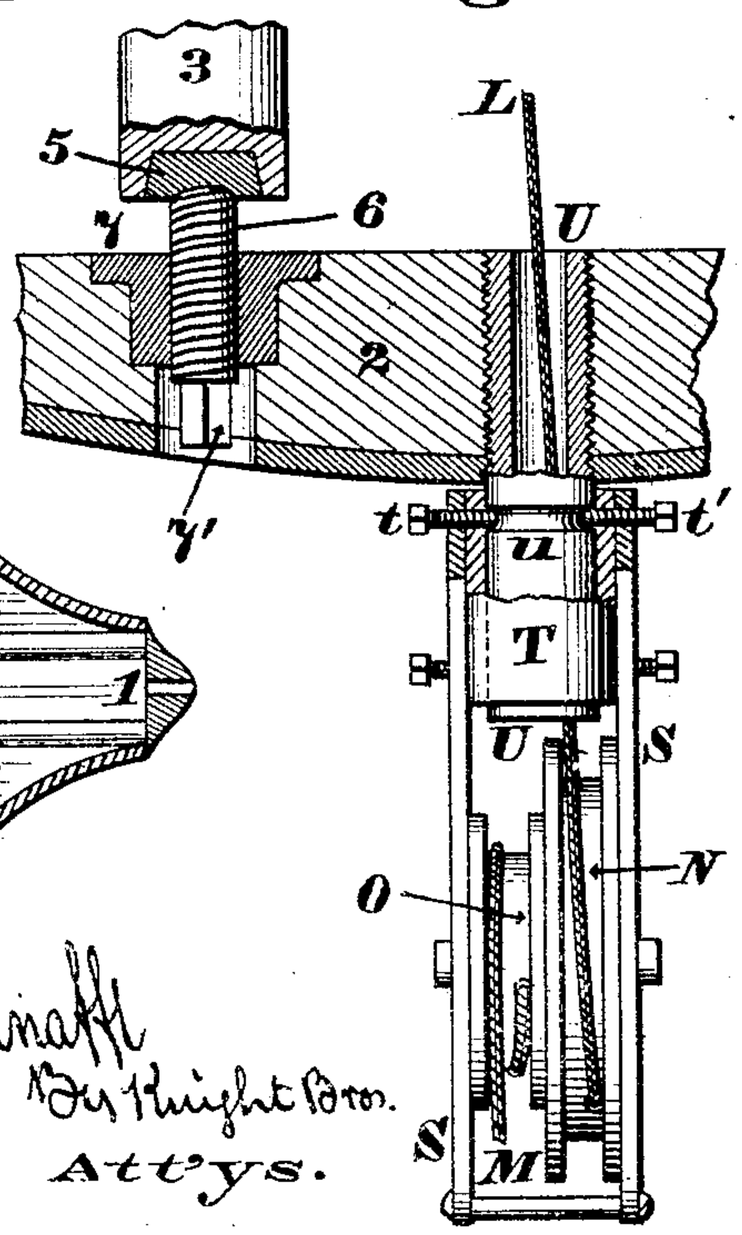


Fig. 6.



Rudolph Knaffl
By Knight Bros.
Att'ys.

Attest.
Jas. H. Layman.
Walter Allen

UNITED STATES PATENT OFFICE.

RUDOLPH KNAFFL, OF NASHVILLE, TENNESSEE.

IMPROVEMENT IN GUITARS.

Specification forming part of Letters Patent No. **134,679**, dated January 7, 1873.

To all whom it may concern:

Be it known that I, RUDOLPH KNAFFL, of Nashville, Davidson county, Tennessee, have invented certain new and useful Improvements in Guitars, of which the following is a specification:

Nature and Objects of the Invention.

The first part of my invention relates to a device whereby the musician is enabled, while performing, to temporarily increase the tension of the strings, and thus to sharpen the sounds thereof independently of or auxiliary to the action of the musician's fret-hand. This object I accomplish by means of an elastic roller, which the operator, by means of a treadle, causes to travel down and to press tightly upon the strings, a spring restoring the said roller to its normal or inactive position on release of the treadle. The second part of my invention consists in the provision, within the case or body, of one or more props or stretchers, having screws and other accessories, whereby the said stretchers can be elongated so as restore or maintain the proper tension of the sounding-board.

General Description.

Figure 1 is a perspective view of my guitar in the hands of the operator. Fig. 2 is a longitudinal section through the instrument. Fig. 3 is a side elevation of the roller and its accessories. Fig. 4 is a longitudinal section of the same. Fig. 5 is a horizontal section through the body of the instrument. Fig. 6 represents the method of coupling the housing to the instrument, and also shows the screw for operating one of the stretchers. Figs. 3, 4, and 6 are to a larger, and Fig. 1 to a smaller, scale than Figs. 2 and 5.

The shell or body A A′, finger or fret board B, and head C of the guitar, may have the represented or other customary form.

Description of Part First.

D is an India-rubber roller, the protruding extremities of whose axle E occupy slots *f* in stirrup F, which embraces the back and sides of the head just above the finger-board, and has on its rear side a saddle, G, for a spring, H, of India rubber. Said spring H terminates in links I, which, engaging over the extremities of the axle E, cause the roller to press upon the key-board. I enable the performer to transfer the pressure-roller D to any desired part of the fret-board so as to tightly nip the strings at that part, by means as follows: The rear side of stirrup F is connected by rods J K, cords L M, and differential pulley N O, with treadle P, which treadle is supported and guided upon a steel staff, Q, and guide R, which latter is attached by screws *r r′* to said staff. This staff is connected to the base of the guitar-body as follows: The upper end of said staff is secured by a thumb-screw, *y*, in a socket, Y, which socket is pivoted to a housing, S, whose sleeve T encircles and revolves around a neck or tube, U, that projects from the guitar body. The said sleeve is retained to said neck by means of screws *t t′*, whose points enter a groove, *u*, surrounding the neck U. This arrangement enables the player to hold his instrument in any convenient position or angle without impairing the efficiency of the treadle movement. Through the tubular neck U the cord L is conducted to the larger member N of the differential pulley, to whose smaller member O is attached the cord M, which is attached to the treadle P. The lower extremity *q* of the staff Q is pointed to prevent its slipping upon the floor. The roller D is made self-retracting upon the fret-board by means of the India-rubber spring V. A small metallic roller, W, occupying a groove or track, X, on the rear of the guitar-shaft, facilitates the upward and downward movements of the pressure-roller.

Operation of Part First.

The staff Q having been inserted in its socket Y and secured by screw *q*, and the cords L and M attached as above, and the guide R having been secured by the screws *r r′* to its proper position upon the said staff, the performer (see Fig. 1) seats himself with instrument conveniently disposed in his lap, and with the pointed extremity of the staff Q resting upon the floor in such position as to place the treadle P in convenient proximity to his right foot. The parts having been arranged as above, the performer is enabled to increase at will the tension of the strings, and thus elevate their pitch by simply advancing the roller D along the fret-board by depressing the

treadle, as above explained. The cord M, from the treadle P, being attached to the smaller sheave or member O of the differential-pulley N O, a slight depression of the performer's foot suffices to produce a considerable depression of the pitch-roller D. The described flexible connection of the staff with the guitar proper enables the former to be folded over the latter for convenient or compact stowage.

Description of Part Second.

The second part of my invention is designed to counteract the tendency of the strings when under full tension to contract the belly or sounding-board A′ and thus to impair its resonant qualities. 1 and 2 are blocks of wood glued firmly within the body at its upper and lower ends, respectively. Secured by their upper extremities to block 1 are two wooden props, 3 4, whose lower extremities contain plates 5, which are adapted to receive the stress of the distending-screw 6, whose nuts 7 are secured in block 2. The external ends of the screws 6 have square or other non-circular heads 7′ to enable their rotation by a socket-wrench or key, so as to augment or relax the thrust of the props, and by so doing to either increase or diminish the tension of the sounding-board.

For guitars thus adapted for maintenance of resonant action I prefer to have the sounding-board entirely intact along its ventral line, as here shown, and to locate any necessary opening near the margin of the sounding-board, as at 8 and 9.

I have used, and prefer, India rubber for my springs, because that material, while possessing the requisite elasticity, is silent in operation, and consequently does not interfere with the proper resonance of the instrument.

While specially designed for guitars, my invention is applicable, in one or both of its parts, to some other stringed instruments, such as violoncellos.

I am aware that tension-rods, having screw-swivels operating through the middle of the sounding-board, have been proposed; but such arrangement is objectionable, because such a perforated board lacks the proper rigidity to coact with such straining device. I therefore do not claim the application of a straining apparatus, broadly considered.

Claims.

I claim as new and of my invention—

1. In the described combination with the yielding pressure-roller D, the treadle P and spring V, for advancing and retracting the said roller upon the fret-board.

2. In the described combination with the elements D P V, the spring H, as and for the object designated.

3. In combination with the elements D P V, the friction-roller W in groove or track X.

4. In combination with the elements D P V, the staff Q *q*, having the described flexible connection with the guitar-body, and being provided with a treadle-guide, R *r r′*.

5. In the described combination with the elements of the preceding clause, the cords L and M and the differential-pulley N O.

6. The described arrangement of continuous sounding-board A′, blocks 1 2, props 3 4, plates 5, distending-screws 6, and nuts 7, for the purpose of stiffening or relaxing such sounding-board, in the manner explained.

In testimony of which invention I hereunto set my hand.

DR. RUDOLPH KNAFFL.

Attest:

GEO. H. KNIGHT,

W. G. EWIN.