

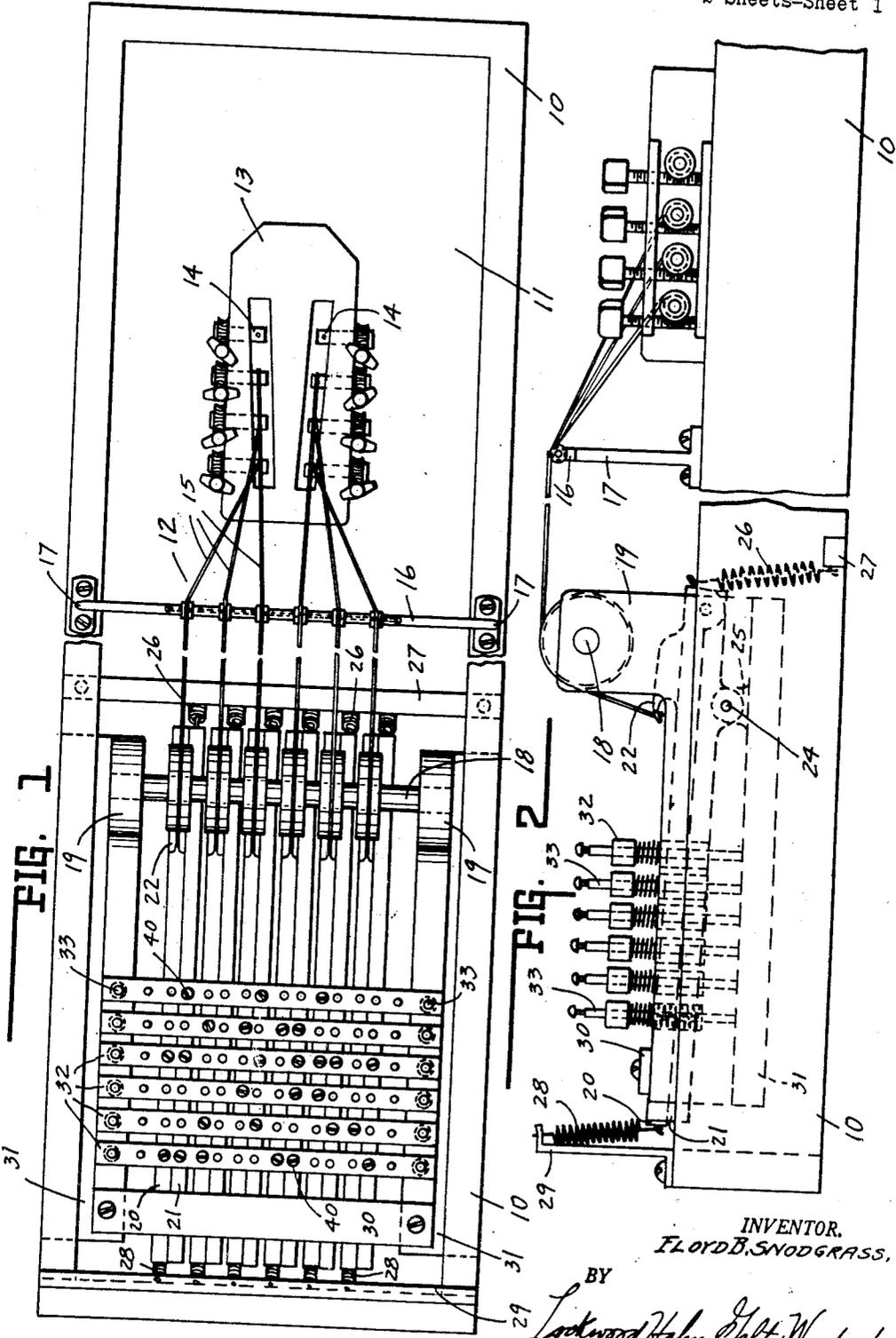
Dec. 15, 1953

F. B. SNODGRASS
GUITAR TUNING DEVICE

2,662,439

Filed Nov. 14, 1950

2 Sheets-Sheet 1



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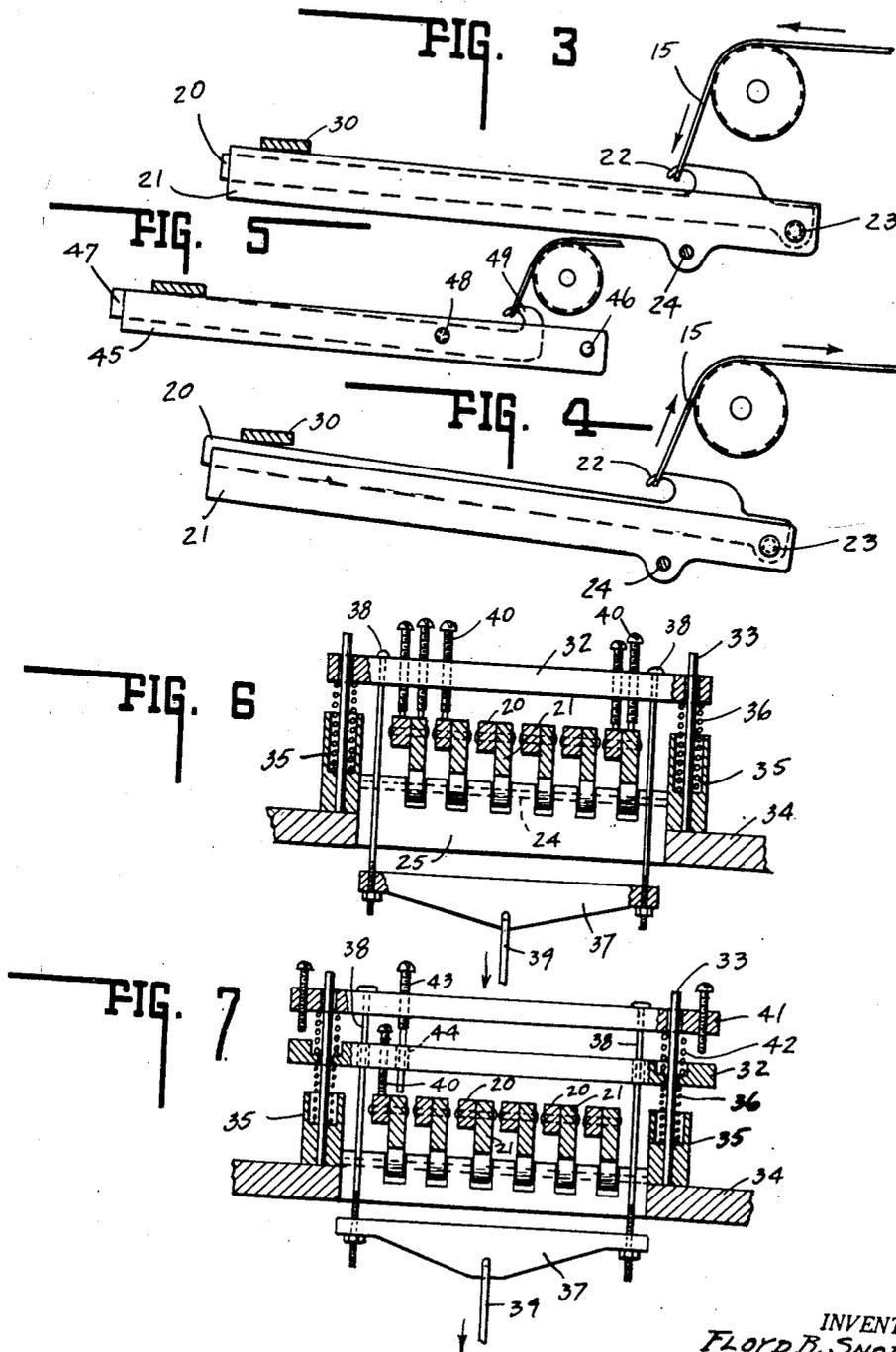
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The present invention relates to improvements in musical instruments of the plucked string type. More specifically, the invention relates to musical instruments of the guitar type and the invention has for one of its objects that for providing means for changing the tension of the strings of such instruments.

A further object of the invention is to provide means whereby the tension of the strings of a musical instrument of the guitar type may be tightened or loosened by the operation of a suitable instrumentality preferably operated by the player's foot.

For the purpose of illustrating the invention, certain embodiments thereof are shown in the accompanying drawings in which

Fig. 1 is a plan view of an instrument embodying my invention.

Fig. 2 is a side elevation thereof.

Fig. 3 is an elevation of the tensioning levers, more or less diagrammatically shown, showing the increased tension lever operated.

Fig. 4 is a view similar to Fig. 3 showing the lessening tension lever operated.

Fig. 5 is a view similar to Fig. 3 showing a modification of the lever mounting.

Fig. 6 is an end view of the structure shown in Figs. 1 and 2.

Fig. 7 is a similar end view showing a modification.

In the embodiment of the invention illustrated I provide a guitar-like instrument which includes a frame 10 supporting therein a board 11, the portion 12 thereof constituting the belly of the instrument.

Mounted on the board 11 is a peg setting 13 adapted to receive the adjustable or rotatable pegs 14 to which the strings of the instrument are anchored in the manner usual with instruments of this character. In the present instance I have illustrated six strings 15 which pass over a bridge 16 which may be in the form of a bar supported on risers 17 secured to the sides of the frame 10. Preferably sheaves are mounted on this bar grooved and anchored against transverse movement to maintain the strings in their spaced relation.

The rear ends of the strings are connected to a tail piece which includes the tensioning means for the strings. This tail piece also includes a plurality of sheaves, one for each string mounted on a shaft 18 in turn supported at its opposite ends on riser arms 19 secured to the side members of the frame 10. As the strings pass from the sheaves on the rod 16 they pass over the

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sheaves and each string is then extended downwardly to be connected to its tensioning levers. The tensioning means for each string constitutes a pair of tensioning levers 20 and 21. The tensioning levers 20 are provided with inturned fingers 22 which approach one another and are spaced apart from the top of the lever to provide a throat into which the string 15 is adapted to be fastened by slipping the knotted end of the string into the throat.

As illustrated in Figs. 3 and 4, this lever 20 is pivoted as at 23 on the lever 21. The lever 21 is pivoted at a point slightly removed from its end on a pivot rod 24 which extends between suitable supporting members 25 secured to the inner face of the side members of the frame 10.

The front end of the lever 21 is biased downwardly through the medium of a coiled spring 26, one end of which is anchored to the front end of the lever 21 and the opposite end of which is anchored to a cross bar 27 extending between the side members of the frame 10. The rear end of the lever 20 is biased in an upward direction through the medium of a coiled spring 28, one end of which is anchored to the rear end of the lever and the opposite end of which is anchored to an anchoring cross bar 29 supported on the rear cross member of the frame 10. The free or rear end of the levers are prevented from moving beyond the predetermined raised position by a cross stop 30 disposed above the levers and anchored to side members 31 supported upon the side members of the frame 10.

By this arrangement normal tension on each of the strings is maintained by its pair of controlling levers. In event, however, it is desired to increase the tension of the string the rear end of the lever 20 is moved downwardly, as indicated in Fig. 3, a slight distance and as the string is connected between the free end of the lever and the pivoted end of the lever with the pivoted end of the lever, under these conditions, stationary, the string may be pulled downwardly, as indicated by the arrow in Fig. 3, increasing the tension.

However, if it be desired to decrease the tension on the string the rear end of the lever 21 is depressed. This will rock the lever on the pivot rod 24 thereby raising the front end of the lever and accordingly raising the front end of the lever 20 which will accordingly release the tension on the string 15 in the direction of the arrow as indicated in Fig. 4.

For operating the respective pairs of levers I provide presser bars 32, one for each pair of

3 pedals. These pressure bars extend transversely across the entire set of levers and are guided on vertically extending guide rods 33 supported on supporting members 34 secured to the underside of the side members of the frame 10. These 5 guide rods extend through cup-like openings 35 likewise resting on the supports 34 which receive coiled springs 36 bearing at their upper ends against the presser bars 32 and accordingly biasing the presser bars 32 in their raised position. 10

Each of the presser bars is moved downwardly through the medium of a cross member 37 connected at its opposite ends to rods 33 extending downwardly from the presser bar and this cross member in turn is connected to a suitable flexible connection 39 adapted to be connected to a control pedal disposed on the floor. Each of the presser bars is provided with a threaded socket 20 above each of the levers constituting the tensioning levers for the strings. These sockets are adapted to receive adjustable pressure stops in the form of screws 40 which may be inserted in selected sockets and adjusted to height to control the tensioning of selected levers by the movement of the respective pedals. 25

By this arrangement various chords may be produced on the instrument by varying the tension of selected strings; for instance, one of the screws may be set to engage one of the tensioning releasing levers of one pair for relieving 30 the tension of one string. Another screw may be set for engagement with the tensioning increasing lever of another string so that when the selected pressure bar is depressed the tension of selected strings may be either relieved or increased accordingly. 35

In some instances it may be desirable to use a single treadle for controlling a plurality of sets of levers by a simple depression of that lever. 40

To this end, as shown in Fig. 7, I have illustrated a structure wherein I provide two presser bars, one presser bar being the presser bar 32 biased in its upward direction by a relatively weak coiled spring 36 and a second presser bar 41 mounted on the same guide members 33 above the presser bar 32. 45

Interposed between the two presser bars I provide a relatively strong spring 42. The pedal is connected through the connecting rods 33 with the top presser bar, these rods passing through 50 with a suitable clearance, the lower presser bar with a suitable presser stops 43

Likewise the adjustable presser stops 43 mounted in the top presser bar 41 are adapted to pass freely as at 44 through openings in the bottom presser bar 32. Accordingly when the treadle is first moved downwardly the top presser bar 41 moves down forcing the bottom presser bar 32 downwardly first and causing its stop 40 to engage a selected lever. When the bottom presser bar 32 reaches the limit of its downward movement a continued pressure on the controlling pedal will compress the spring 42 moving the top presser bar 41 down and causing its presser stop 43 to engage another selected lever. 55

In Fig. 5 I have illustrated a modification of the lever mountings. In this figure I provide a lever 45 pivoted at its front end at 46 and having its rear end movable downwardly. A second lever 47 is pivotally mounted as at 48 to the first lever and the end 49 of this lever 47 is connected to the string to be controlled. The rear ends of the levers abut against a top stop similar to 60

the stop 30 for the levers illustrated in Figs. 3 and 4. Accordingly, when lever 45 is depressed rocking on its pivot 46, it will pull down the pivot point 48 of the lever 47 and as the free end of this lever is prevented against vertical upward movement the front end of the lever is pulled downwardly thereby increasing the tension on the string. When, however, the rear end of the lever 47 is moved downwardly with the lever 45 remaining stationary, the front end of the lever 45 rocks upwardly on its pivot 48 releasing the tension on the string.

The invention claimed is:

1. A tensioning means for a string instrument having one end of the string permanently anchored, comprising a pair of controlling levers for said string, one of said levers being pivotally mounted adjacent its forward end on a stationary support, the other of said levers being pivotally connected to said first lever rearwardly of said pivotal mounting, said other lever having means for anchoring the other end of said string, said means being interposed between said pivotal connections, the rearward ends of each of said levers being depressible, and vertically adjustable means selectively engageable with the rearward ends of either lever whereby the pivot point connecting said respective levers is vertically adjustable.

2. A tensioning means for a string instrument having a plurality of strings each of which is permanently anchored at one end, comprising a plurality of pairs of levers for controlling the tension of said strings, each pair of levers including one lever having its forward end portion pivotally connected to a stationary support and a second lever pivotally connected to said first lever rearwardly of the forward end thereof, said second lever of each pair having anchoring means for the other end of each of said respective strings interposed between said respective pivotal connections, the rearward ends of each of said respective pairs of levers being depressible, a transverse stop member disposed above the rearward ends of said respective pairs of levers and normally engageable thereby, a vertically movable presser bar having presser stops selectively disposed for engagement with selective pairs of said levers, a second presser bar disposed above said first presser bar and having selective presser stops mounted thereon for selectively engaging predetermined levers, means for biasing said first presser bar in its retracted position, resilient means interposed between said first presser bar and said second presser bar for moving said second presser bar to its retracted position, said resilient means offering a greater resistance to the downward movement of the second bar than the biasing means of the first bar, and a single operating means connected to the said second bar for depressing the same.

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