United States Patent

[11] 3,603,192

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[54] **FOOT-OPERATED BASS-STRINGED MUSICAL INSTRUMENT**
12 Claims, 6 Drawing Figs.

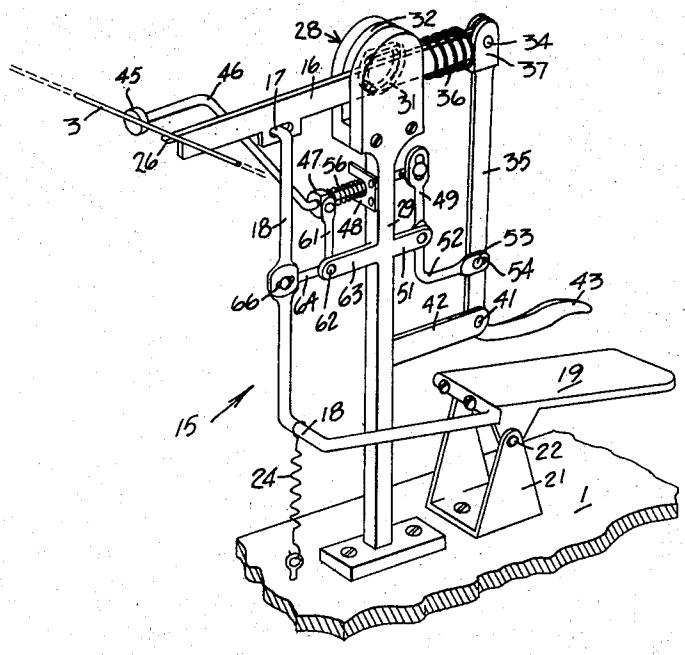
[52] **U.S. Cl.** **84/173,** 84/267, 84/320
[51] **Int. Cl.** **G10d 1/00,** G10d 1/08, G10d 3/16
[50] **Field of Search** 84/173, 444, 320, 321, 258, 267

[56] **References Cited**
UNITED STATES PATENTS

3,319,502	5/1967	Hackney	84/173
3,320,844	5/1967	Lostimolo	84/173
3,381,565	5/1968	Haile	84/444
3,443,468	5/1969	Kidwell	84/320 X

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ABSTRACT: In a foot-operated bass-stringed instrument, in which four tense, electric bass strings are mounted on a vertical backboard; a plurality of chord forming pedals actuated by the left foot, a pedal actuated plucking mechanism; the improvement of an individual plucking pick for each string pivotally supported to pluck the adjacent string, a separate pedal to actuate each pick, and a pivoted heel support for the right foot of the musician to facilitate the turning of the foot over the selected pedals for the respective plucking mechanisms. The plucking mechanism is selective to pluck on the upstroke and downstroke of the pick, or pluck only on the upstroke but to miss the string on the downstroke. A vibration stopping pad is normally pressed against each string and is moved from the string simultaneously with the respective plucking.



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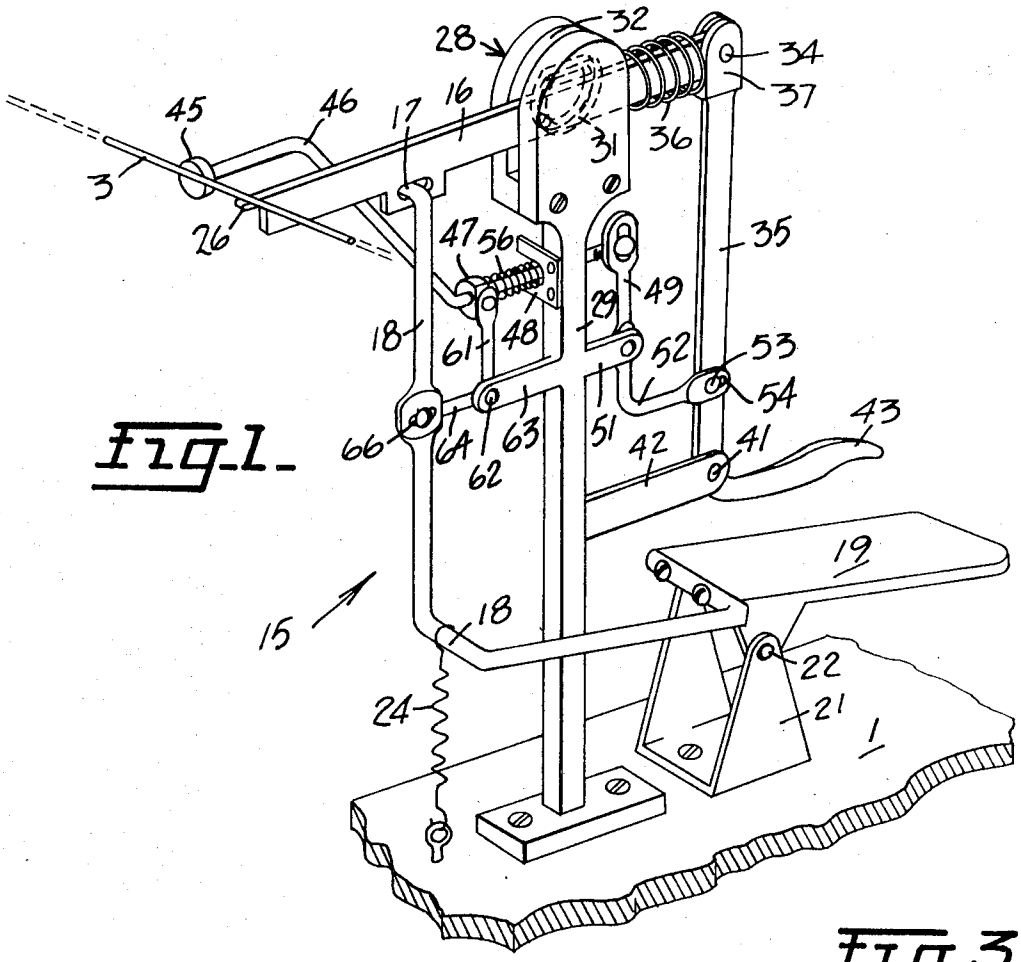


Fig. 1.

Fig. 2.

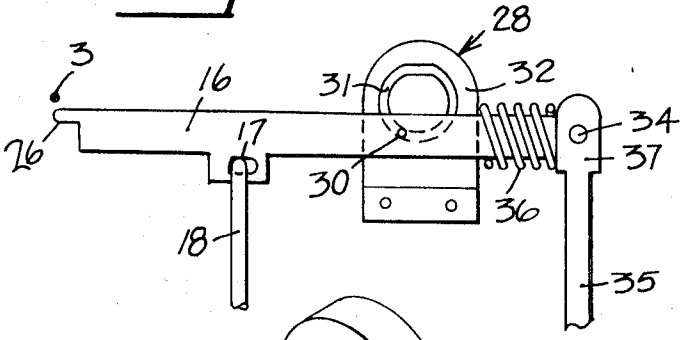


Fig. 3.

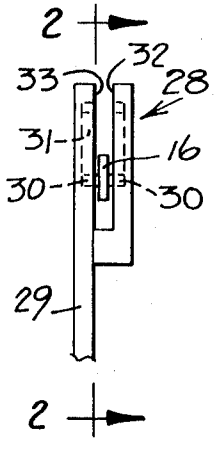
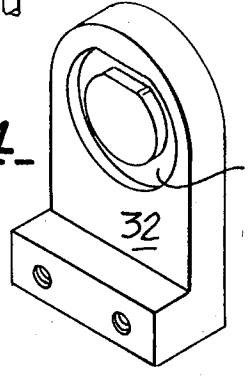
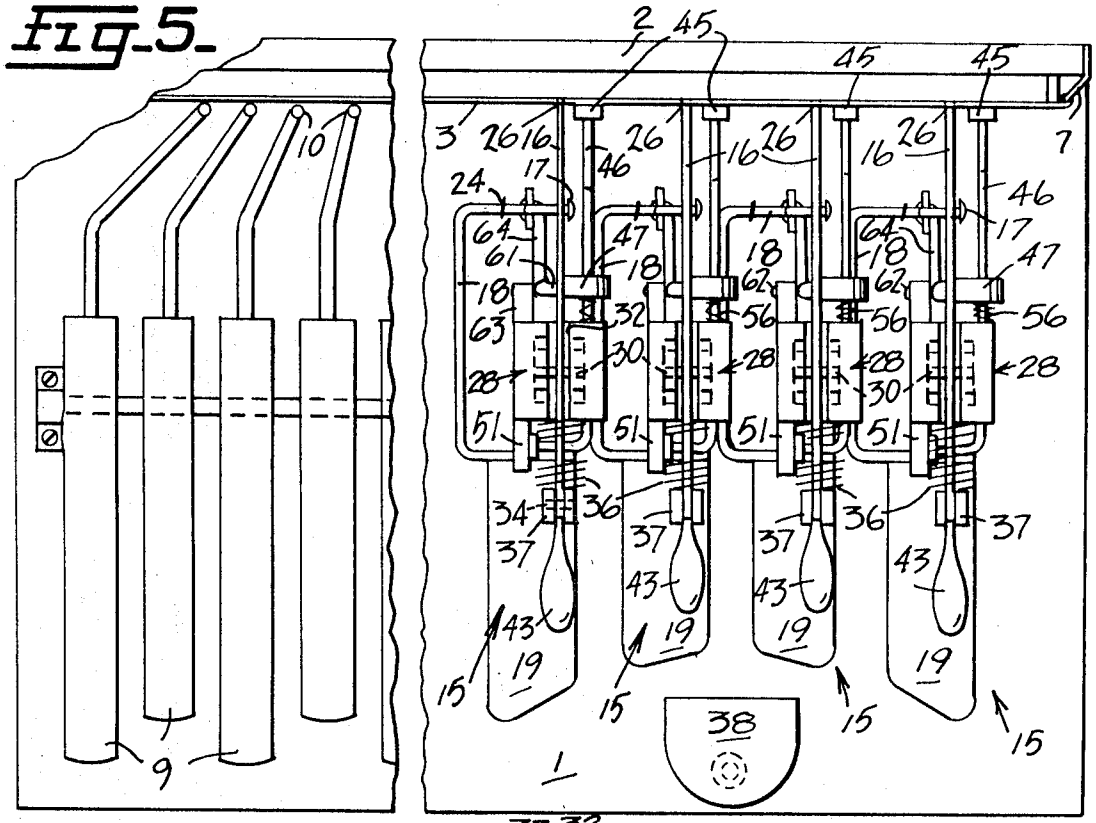


Fig. 4.



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Fig-5-



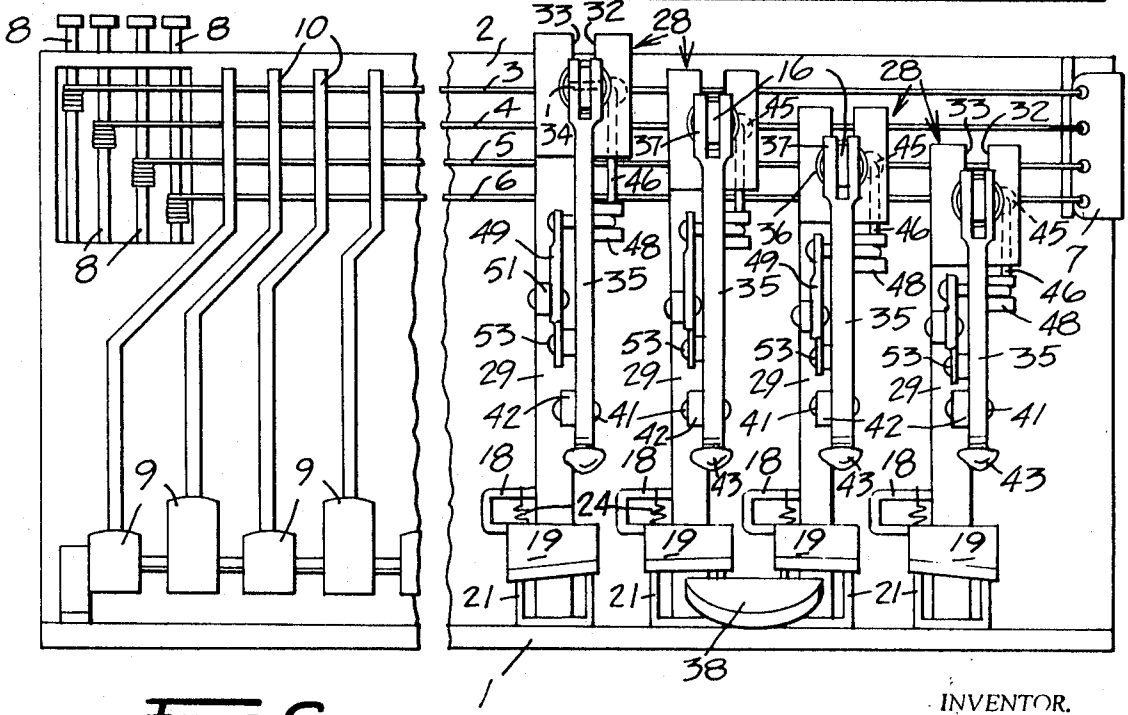


Fig-6-

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FOOT-OPERATED BASS-STRINGED MUSICAL INSTRUMENT

BACKGROUND OF THE INVENTION

Previously, when providing a foot-operated bass-stringed instrument, the plucking device was so arranged as to pick the strings individually but successively. The sequence of picking the strings was not changeable as shown in the U.S. Pat. No. 3,320,844 of Lostimolo, dated May 23, 1967. This is a serious limitation in the use of such foot-operated bass-stringed instruments, and it does not solve the problem of a solo instrumentalist satisfactorily.

The principal object of this invention is to provide for an instrumentalist a foot-operated string bass instrument which not only can take the place of a bass viol, but the strings of which can be picked individually and selectively so as to truly produce the effect of base viol.

Another object of the invention is to provide a convenient arrangement for the right foot of the musician so related to the respective plucking mechanisms for the individual strings as to facilitate the shifting of the foot for selective individual plucking, and to simultaneously free the plucked string from the pressure of a vibration-inhibiting pad.

DESCRIPTION OF DRAWINGS

FIG. 1 is a perspective view of one of the plucking and pad control devices relatively to one string.

FIG. 2 is a fragmental view illustrating the guiding of the pick finger, the view being taken on lines 2—2 of FIG. 3.

FIG. 3 is an end view of the pick finger and its guide.

FIG. 4 is a perspective view of the removable side of the pick finger guide.

FIG. 5 is a somewhat diagrammatic fragmental top plan view of the foot-operated instrument with the four pedal-operated string plucking devices.

FIG. 6 is a fragmental front view of said instrument.

DETAILED DESCRIPTION

In the usual foot-operated bass-stringed instrument there is a baseboard 1 supported on the floor and a vertical backboard 2 extending upwardly from the baseboard 1.

Four bass strings 3, 4, 5 and 6 of the known electric bass type, extend horizontally along the face of the backboard 2 nearer to the player, in tense-tuned condition substantially to correspond to the tuning of the strings of a bass viol.

Each string is supported at one end on a tailpiece 7, and at their other end on a tuning peg 8 on the backboard 2. Suitable bridges, not shown, are provided in the usual manner.

Adjacent the left foot of the player, facing the instrument, are a plurality of chord-forming foot pedals 9. The ends of the foot pedals 9 adjacent the backboard 2 are formed by a rod or bar 10 extending transversely across all of the strings so as to depress the strings when the respective foot pedals 9 are depressed. The chord-forming foot pedals 9 are suitably pivoted and spring held in retracted position, and are played in the usual manner.

The improvement of the present invention pertains to the plucking or picking means on the right-hand zone, or sounding zone, of the strings viewing FIGS. 5 and 6. The plucking or picking means include four separate mechanisms 15, one for each string.

Each plucking or picking mechanism 15 includes a pick finger 16, connected by a pivot 17, to an upward extension 18 of a pedal 19. A bracket 21 pivotally supports the pedal 19 at a pedal pivot 22 as shown in FIG. 1. A spring 24 connected at one end thereof to the baseboard 1 and its other end to the extension of the pedal 19 urges the pick end of each pedal 19 downwardly toward the baseboard 1 into an initial position.

A pick 26 is provided on the free end of each pick finger 16, so that as the pick finger 16 is raised upwardly the pick 26 plucks the adjacent string.

The pick finger 16 is supported on a guide 28 on the top of a bracket 29 extended from the baseboard 1. The pick finger 16 has a guide pin 30 extended therethrough into opposite cam grooves 31 in the walls 32 and 33 of the guide 28. The wall 32 is removably attached to the wall 33 on top of the bracket 29. The pick finger 16 extends through the space between the guide walls 32 and 33 and is fulcrumed on a pivot 34 on top of an actuating bar 35. A coil spring 36 between the guide 28 and the yoke 37 for the pivot 34, normally urges the pick finger 16 away from the string 3. The guide grooves 31 are generally arcuate and the initial position of the pin 30 is advanced toward the string 3 so that as the pedal 19 is pressed down, the upward extension 18 moves upward and the pin 30 guides the pick finger 16 toward the string 3 for picking the same. At the top of the stroke of movement of the pick finger 16 the guide grooves 31 are flattened so that when the pin 30 reaches the top position, then the spring 36 pulls the pick finger 16 away from the string 3, whereby as the spring 24 pulls the extension 18 downwardly, the pin 30 will be guided at the farther arc 31 back to its initial position thereby preventing the plucking of the string 3 on the return or downstroke of the pick finger 16.

A heel rest 38 is swivelably mounted on the baseboard 1 at a proper distance from the foot ends of the tone pedals 19 to permit the resting of the ball of the foot on the selected pedal 19. As shown on FIG. 5, the foot ends of the tone pedals 19 are wide and are arranged substantially on an arc centered substantially on the heel rest 38, so that the foot can be swung around for firm engagement with either selected tone pedal 19.

In operation the musician plays the chords with his left foot in the usual manner, and with his right foot plucks any selected string in any selected sequence. As shown in FIG. 6 the height of the four brackets 29 is so graduated that the pivot and guide mechanisms of the respective pick fingers 16 are substantially opposite the respective strings on which the respective pick fingers 16 work.

The actuating bar 35 is fulcrumed on a pivot 41 on a lateral bearing 42 extended from the bracket 29. An upper foot pedal 43 on the actuating bar 35 extends from the pivot 41 parallel with and spaced above the foot pedal 19 so that it may be pushed up by the foot of the player at will. In this manner the player by pushing up on the underside of the upper pedal 43 moves the actuating bar 35 toward the guides 28 and thereby compresses the spring 36 so as to prevent the pin 30 from moving away from the string 3 at the top of the stroke. The pin 30, therefore, returns on the side of the arcuate guide nearer the string 3 and causes the pick 26 to pluck the string 3 during its return or downstroke.

It is desirable that the vibration of the strings be inhibited except when they are plucked. For this purpose a pad 45 is pressed against the respective strings and is released during the plucking of each string. The pad 45 is supported on a bent rod 46 which extends through a guide 47 and then a guide plate 48 on the bracket 29 to the upper arm 49 of a bellcrank. The bellcrank is pivoted in a bearing lug 51 on the bracket 29. The other arm 52 of the bellcrank is bent and is connected to the actuating arm 35 by a pivot 53 in a horizontal elongated slot 54. A coil spring 56 between the guide 47 and the guide plate 48 normally urges the guide 47 and the rod 46 and the pad 45 toward the string 3. The upper end 61 of another bellcrank is pivoted in the fulcrum 62 in a bearing lug 63 extended from the bracket 29 toward the strings. The other arm 64 of the bellcrank is pivoted in a loose slot 66 in the upward extension 18 from the pedal 19, so that when the pedal 19 is pressed down and the upward extension 18 moves the pick finger 16 upwardly the bellcrank is swung so that the arm 61 compresses the spring 56 and shifts the pad 45 away from the string 3 just prior the plucking of the string 3 by the pick 26.

When the upper pedal or foot lever 43 is pushed up for picking the string 3 on the downstroke of the pick finger 16, then the other crank's arm 49 is pulled so as to pull the horizontal portion of the rod 46 against the action of the spring 56 and to pull the pad 45 away from the string 3 an instant before the downward moving pick 26 plucks the string 3.

What I claim is:

1. In a foot-operated stringed musical instrument including
an instrument frame having a base and a backboard,
plurality of tense bass strings mounted on said backboard to extend through a chord zone and a sounding zone,
a plurality of chord-forming foot pedals movably mounted on said base, in said chord zone, each pedal having a member extending transversely of said strings at a spaced distance therealong for forming a chord when the panel is depressed,
the improvement of
individual string plucking means for each of said strings mounted on said base in said sounding zone,
each of said plucking means including a plucking element moving along the front of said backboard to individually pluck a single adjacent string,
a sounding foot pedal for actuating said plucking element, means to transmit movement from said sounding foot pedal to said plucking element,
means to guide said string-plucking means to pluck the adjacent string in one direction of its movement and selectively to bypass said adjacent string or to pluck said adjacent string during its return stroke in the opposite direction,
and foot-operated control for said selective guide means.

2. A musical instrument as specified in claim 1, and
a swivelable heel support,
said sounding foot pedals being arranged relatively to said heel support to be engageable by the ball of a foot with the heel resting on said heel support.

3. A musical instrument as specified in claim 1,
said string plucking means including a pivoted pick finger,
said means to transmit movement including
an extension of said sounding foot pedal being pivotally connected to said pick finger so as to raise said pick finger about its pivot when the sounding pedal is depressed and to lower said pick finger when its foot pedal is raised,
and resilient means to normally raise said sounding foot pedal.

4. A musical instrument as specified in claim 1, and said foot-operated control being operable to shift said finger at will toward plucking position.

5. A musical instrument as specified in claim 4,
and connecting means between said foot-operated control and said finger for transmitting oscillation of the foot lever to said finger in the respective directions.

6. A musical instrument as specified in claim 1, and
a vibration inhibiting member engaging each string,
means to hold said member initially in engagement with its string,
and means connected to and actuated by said movement transmitting means to move said member away from its string thereby to free its string for vibration by plucking.

7. A musical instrument as specified in claim 1, and
a vibration inhibiting member engaging each string,
means to hold said member in engagement with its string,
and means alternately actuatable by said movement transmitting means and by said foot-operated control to move said member away from its string to permit vibration by the respective pluckings.

8. A musical instrument as specified in claim 1, and
each individual string plucking element being a pick finger with a pick on its free end,
a pivotal support pivoting the other end of said pick finger,
said guide means including a cam guide spaced from said pick and engaging said pick finger to guide said finger away from or toward its string during its return movement after each plucking according to said foot operated control,
said movement transmitting means being an upward extended member connected to each sounding pedal and pivotally connected to the adjacent pick finger,
and resiliently yieldable means to return each sounding pedal to an initial position.

9. A musical instrument as specified in claim 6, and
means to fulcrum said pivotal support for movement toward and away from the adjacent string thereby to shift the pivotal support with the shifting of said pick finger by said guide means away from the adjacent string,
and said foot-operated control adjacent each sounding pedal being connected to said pivotal support to prevent the shifting of said pivotal support and said pick finger away from the adjacent string thereby to cause the plucking of the adjacent string during the return of the pick finger to its initial position after each operation of its sounding pedal.

10. A musical instrument as specified in claim 8, and
a vibration dampener pad for each string,
pad supporting means,
and means coordinated with movement of said pick finger to shift said pad supporting means for releasing said pad from its string substantially immediately before each plucking of said string.

11. A musical instrument as specified in claim 9, and
a vibration dampener pad for each string,
pad supporting means,
and means coordinated with movement of said pick finger to shift said pad supporting means for releasing said pad from its string substantially immediately before each plucking of said string.

12. In a foot-operated stringed musical instrument including
an instrument frame having a base and a backboard,
plurality of tense bass strings mounted on said backboard to extend through a chord zone and a sounding zone,
a plurality of chord forming foot pedals movably mounted on said base, in said chord zone, each pedal having a member extending transversely of said strings at a spaced distance therealong for forming a chord when the panel is depressed,
the improvement of
individual string plucking means for each of said strings mounted on said base in said sounding zone,
each of said plucking means including a plucking element moving along the front of said backboard to individually pluck a single adjacent string,
a sounding foot pedal for actuating said plucking element,
and means to transmit movement from said sounding foot pedal to said plucking element,
resilient means to normally urge said plucking means away from the adjacent string,
and a foot-operatable device to shift said plucking means toward the adjacent string at will after plucking and during the return stroke of said plucking means.