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PITCH CHANGING DEVICE FOR STRING INSTRUMENTS

Filed Dec. 22, 1958

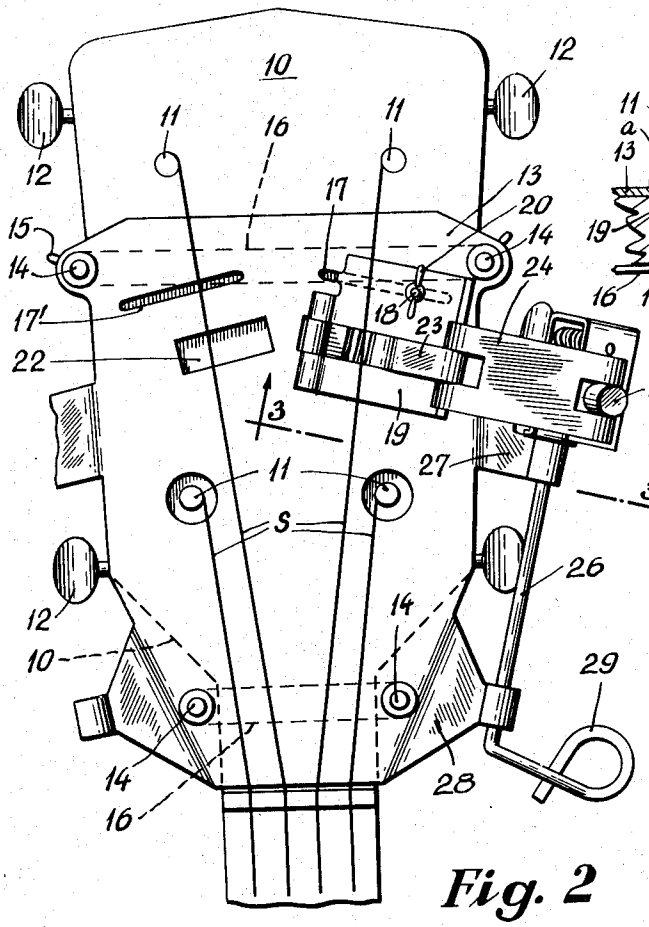


Fig. 2

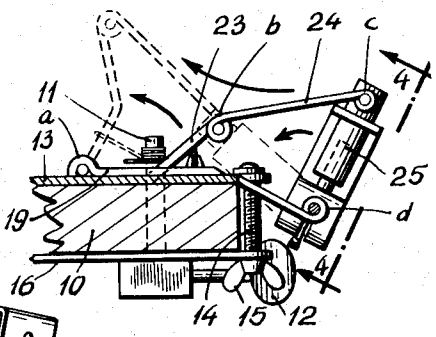


Fig. 3

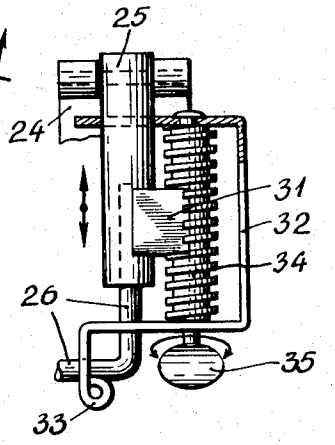


Fig. 4

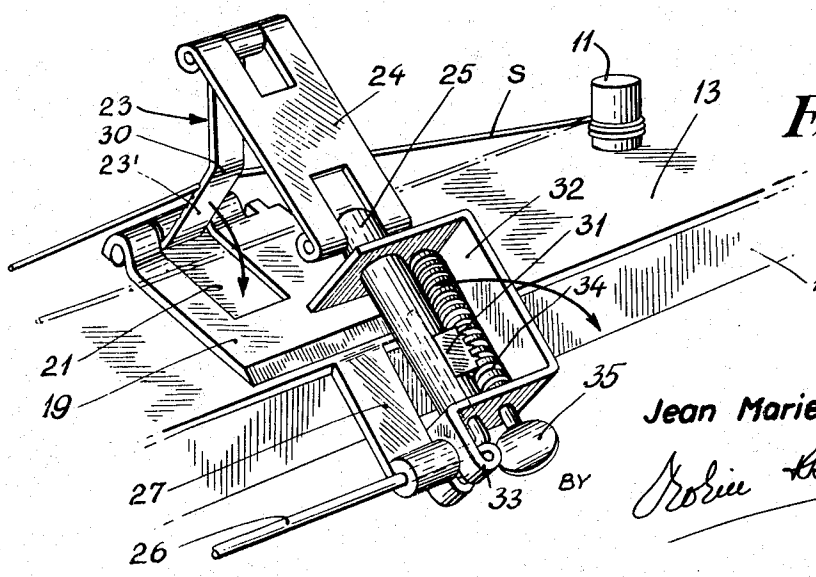


Fig. 1

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PITCH CHANGING DEVICE FOR STRING INSTRUMENTS

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The present invention relates to a device for raising the pitch of one or more strings of a musical instrument, by increasing the tension of the string. Devices of this type have already been conceived, but they have not found wide application, because they were clumsy to operate, difficult to mount on the instrument, and in general unsatisfactory.

The device according to the invention obviates the above disadvantages by providing a new structure which consists of a member manually extensible in a direction across that of a string to be tensioned; one end of this extensible member being pivoted to a tensioning member on which is a particular string of the instrument rests and which, as the first member is extended, moves the string so as to increase the tension thereof. The device is further provided with means to rapidly snap the tensioning member out of engagement with the string and relieve the tension thereof.

With the above construction it is easy for the player to select the musical range which is to be given to the device, and to actuate the device while playing. The invention is of particular use when tuning in an accompanying instrument or a singer, and it makes possible sliding musical effects very similar to those of a Hawaiian guitar.

The device in accordance with the invention is furthermore simple and inexpensive to build, and is fully adaptable to various musical instruments, in particular those played by plucking the strings, such as guitars, banjos etc.

Further features of the invention will become apparent from the following description of an embodiment thereof, in conjunction with the accompanying drawings, in which:

FIGURE 1 is a perspective view of the device in raised, string stretching position;

FIGURE 2 is a top view of the device in non-operative position;

FIGURE 3 is a section along line 3—3 of FIGURE 2; and

FIGURE 4 is an end view taken on line 4—4 of FIGURE 3.

Referring to FIGURE 2, numeral 10 indicates a conventional string instrument head, comprising string pins 11 and tuning keys 12.

A base plate 13, provided with suitable holes for accommodating pins 11, is fastened to the head 10 as shown in FIGURE 3, by means of bolts 14 and wing nuts 15, bolts 14 extending adjacent the sides of head 10, and through attachment bars 16 on the lower face of head 10.

Base plate 13 (FIGURE 2) comprises a slot 17 having its walls downwardly bevelled; a conical head bolt 18 has its head in slot 17, and extends through a hole of a foot plate 19, fastening said foot plate 19 to base plate 13 by means of a wing nut 20. The head of bolt 18 can slide along slot 17, so that the position of foot plate 19 can be varied. Foot plate 19 has on its lower face a rectangular boss corresponding to a depression 21 of its upper face, shown in FIG. 1. A corresponding rectangular depression of greater length (hidden by foot plate 19) is suitably located in the upper face of base plate 13, so that the foot plate 19 is always lined up in the same direction. Base plate 13 may also comprise a second slot 17' and a second depression 22 to permit mounting of a second foot plate. It will be understood of course, that

base plate 13 and foot plate 19 may be considered as one single supporting plate.

Tensioning of a string S is obtained by means of a tensioning member 23, hinged at one end to foot plate 19 and at the other end equally hinged to an extensible member. This extensible member is formed of an upper arm 24 pivotally connected to a lower arm, which provides the extension of the member. Upper arm 24 is hinged to the lower arm and more particularly to tube 25 which is in telescopic engagement with a rod 26 (FIGURE 4), bent at 90° and hinged on two outwardly extending legs 27 and 28 of base plate 13 (FIGURE 2).

As seen in FIGURE 2, rod 26 comprises an integral handle portion 29, and tensioning member 23 lies partly under the string S of the instrument, so that when the handle 29 is pivoted, and applies a torque to the hinged portion of rod 26, the assembly of rod 26 and tube 25 is also pivoted, causing tensioning member 23 to lift, and stretch the string S, whereby the tension, and consequently the pitch of string S is raised, in proportion to the amount by which handle 29 is pivoted.

As will be readily seen from FIGS. 2 and 3, once handle 29 is rotated to the full extent, that is, when tube 25 abuts against the edge of plate 13, pivot point C between the upper and lower arms will have just passed the dead center when the two arms are in axial alignment. At this moment, further tensioning of string S is obtained by means of the assembly of tube 25 and rod 26.

For the above purpose, tube 25 (FIGURE 4) has fastened thereon a threaded lug 31. A yoke 32 is slidably mounted on tube 25 and on rod 26, and has a notched extension 33 which engages the hinged portion of rod 26, whereby the yoke 32 is held against rotation about tube 25 and rod 26. Rotatably mounted between the arms of yoke 32 is a screw 34 having an outwardly extending key 35; screw 34 engages the lug 31. It will be seen from FIGURES 1 or 4 that counterclockwise rotation of the screw 34 by means of key 35 causes the lug 31 to travel upwardly along screw 34, whereby pivot points *c* and *d* separate, and the final tension of string S is increased. Clockwise rotation on the other hand causes decrease of the final tension.

In the embodiment illustrated the hinges of tensioning member 23 and upper arm 24, and of foot plate 19 are preferably rolled out of the flat metal of which these elements are made. The same is the case for the hinges of legs 27 and 28. The outer end of extension 33 of yoke 32 is beaded to avoid a sharp edge. The string engaging face of tensioning member 23 may be grooved to avoid slipping of the string S thereon; the engagement angle, of tensioning member 23 with the string is determined by the position of foot plate 19. Also to prevent slipping, member 23 may be concaved inwardly.

The embodiment illustrated and described is given only by way of example, and various modifications are possible within the spirit and scope of the appended claims.

I claim:

1. Pitch changing device for string instruments, comprising in combination: a string instrument; a base plate fixed to the head of said instrument and a supporting plate adjustably fixed over said base plate; a rigid angularly bent tensioning member pivotally mounted at one end on said supporting plate and upwardly pivotable in a direction crosswise of a string to be tensioned; said string resting against and lying within the said angular bend when said member is in operative position so that the pivoting thereof will vary the tension in said string; an extensible member comprising a first and a second arm pivotally joined together end-to-end; the other end of said first arm being pivotally connected to the free end of said tensioning member and the other end of said second arm being hingedly connected to the base plate;

manual means on said extensible member for providing extension thereof; said second arm resting on the base plate in operative position and when the two arms have passed their point of dead center.

2. A combination as claimed in claim 1, wherein the hingedly connected end of said second arm is provided with a handle integral therewith, the rotation of which from operative position pivots said second arm and shifts it past the point of dead center with the first arm, thus moving the tensioning member away from the string to release the tension thereof.

3. A combination as claimed in claim 1, wherein said manual means comprises a telescopic rod and tube assembly, said rod being bent at about 90° and hinged at two points on said base plate to constitute said handle; a yoke slidably mounted on said tube and fixed to said rod; a lug fastened to said tube, a screw rotatably mounted between the arms of said yoke and engaging said lug.

4. Pitch changing device for string instruments comprising in combination; a string instrument; a base plate fixed to the head of said instrument; a rigid angularly bent tensioning member pivotally mounted at one end on said base plate and upwardly pivotable in a direction

cross-wise of a string to be tensioned; said string resting against and lying within the said angular bend when said member is in operative position so that pivoting thereof will vary the tension in said string; an extensible member comprising a first and a second arm pivotally joined together end-to-end; the other end of said first arm being pivotally connected to said tensioning member and the other end of said second arm being hingedly connected to the base plate; manual means on said extensible member for providing extension thereof; said second arm resting on the base plate in operative position and when the two arms have passed their point of dead center.

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