Oct. 26, 1926. 1,604,367

R. R. PAGE

PEG OR KEY FOR STRINGED MUSICAL INSTRUMENTS

Filed Jan. 27. 1922

Fig. 1.

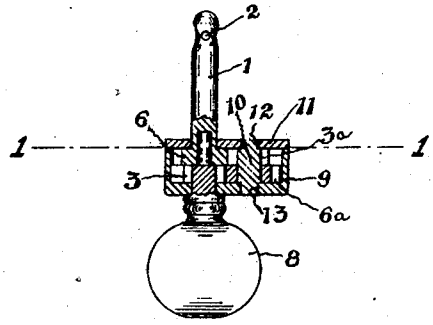


Fig. 2.

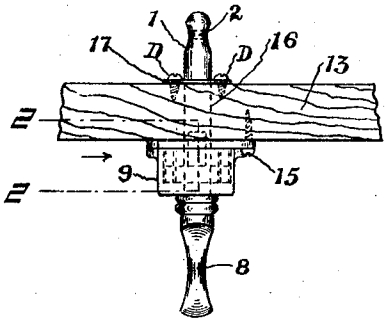


Fig. 3.

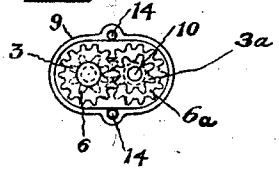


Fig. 4.

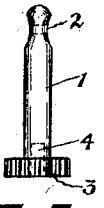


Fig. 6.

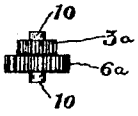


Fig. 5.

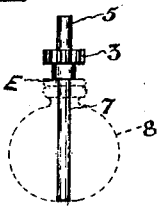
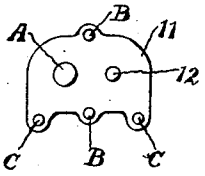


Fig. 7.



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UNITED STATES PATENT OFFICE.

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PEG OR KEY FOR STRINGED MUSICAL INSTRUMENTS.

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My present invention relates to an improved form of peg or tuning key for stringed musical instruments.

One of the important features of my device is the provision of means, in conjunction with the peg, whereby a compounding of winding forces, between the finger piece and the string pin, is accomplished through comparatively simple and economical means.

Another feature of my invention is the provision of means whereby the peg in its entirety may be readily assembled in an instrument in operative position, or detached therefrom at will.

Another advantageous feature of my device is the provision of means, which, while compounding the relative winding forces between the string pin and thumb key proper, also operate to hold said key and pin in operative axial alinement.

Another important advantage of my device is the mode of construction whereby I am enabled to keep the string pin and the key shank in alinement thereby permitting the complete peg to be used in vertical position on the head of the instrument.

Figure 1 shows my device in partial section taken on line 2—2 of Fig. 2, looking in the direction of the arrow; the key board being removed.

Fig. 2 is a side elevation of my device in assembled position upon the keyboard of an instrument;

Fig. 3 is a view taken on the line 1—1 of Fig. 1, showing the cover removed.

Fig. 4 is a side view of the key peg member;

Fig. 5 is a side elevation of an element coacting with said key peg member.

Fig. 6 is a side view of one of the compounding gears; and

Fig. 7 is a plan view of the base-plate, removed.

My device, as shown in Figs. 1 and 2 in assembled position, comprises a string pin 1 having the usual string attaching aperture 2 at the upper end thereof, the said pin having at its lower end, as indicated in Fig. 4, an integral spur gear 6 cut thereon, the same end also being provided with an inset opening or bore 4, to rotatably receive therein the upper part 5 of a thumb key stem, the entire stem being generally denoted by E, Fig. 5. The thumb key stem E has near its upper end 5 a spur pinion 3 preferably integrally mounted thereon, and also has a lower shank portion 7.

The lower shank portion 7 is sufficiently long to permit of rigidly attaching thereto, in the usual manner, an ivory or composition thumb-piece 8. When the parts 1, 5 and 8 are assembled, as described, within a preferably metal casing, of cap-like form, generally denoted by 9, Fig. 1, the shafts or stems 1 and 5 will be in alinement with one another, but they are actually rotatably free relative to each other, and in actual use always rotate at unlike speeds, but in the same direction of rotation.

Within the housing 9 and adjacent the spur gear 3 and pinion 6, but meshed therewith, are a second gear and pinion set 3^a and 6^a, these two gears being rigidly assembled together upon a stud 10, and upon any rotation being transmitted to either of the two gears 3^a and 6^a, they are compelled to move together without any relative rotation therebetween. The assembled elements 10, 3^a and 6^a are shown in Fig. 3 and may be referred to as a compound gear set.

Referring to Fig. 1, it will be noted that the housing which comprises a base-plate 11 and the caplike portion 9, has provided therein two apertures 12 and 13 in which are mounted the opposite ends 10 of the compound gear 6^a 3^a. As was previously noted, the lower key portion 8 is provided with a small driving pinion 6, which meshes with the driven gear 6^a and that the upper peg member 1 is provided with a large driven gear 6, which, in turn, meshes and is associated with the driven gear 3^a, so that when the thumb piece 8 is rotated gear 3 causes the driven gears 6^a and 3^a, and the stud 10, to move simultaneously.

In addition, driven gear 6 is located upon stem 1, being in mesh with driven pinion 3^a, and is also caused to rotate, but at a very much slower rate of movement due to the reduced ratio of the train of gears from the key 8 to the stem 1, thereby causing stem 1 to rotate at a greatly reduced speed and in the same direction of rotation as the key portion 8.

As shown, a rotation of the key 8 results in a comparatively reduced or slow rotation of the string stem 1, with a consequent increase of power upon the stem 1 for tightening strings upon an instrument.

It will be noted that the gears 3 and 3ª are identical and the pinions 6 and 6ª are identical, thus conducing to the compactness of the device in assembling and the ease and cheapness of manufacture of the device.

It has been found in practice that the gearing above set forth holds a string to any predetermined or desired tension without permitting an unwinding of the post 1, when under tension, and therefore there is no need for clutches to prevent unwinding of the string post. The internal friction of the device, when in assembled position, under tension, is sufficient to hold the post 1 stationary under strain.

In order to provide means whereby the assembled device may be rigidly affixed to the peg head 13 of an instrument, Fig. 2, the base plate 11, Fig. 7, is provided with an opening A, wherein to receive and rotatably support the string post 1. The base plate 11 is also provided with an opening 12 in which to receive the upper end of the post 10 of the compound gear 3ª, as previously described. In addition thereto said base plate 11 is also provided with perforations or openings B, whereby the lower cap 9 may be suitably affixed to the said base plate by means of two screws which pass through the base plate and enter the threaded openings 14 provided in the cap 9, Fig. 3, whereby the cap 9 and the base plate 11 may be rigidly held to each other, but the cap is removable, without having to remove the base plate 11 from the peg head when it is desirable to remove the gearing and string stem 1 for inspection. The cap 9 provides an oval interior chamber which fits closely around the associated pinions and gears and wherein they are compactly contained as shown in Figs. 1 and 3.

As a means for attaching the assembled device to a keyboard peg head 13 and retaining the base plate on the peg head when the cap 9 is removed there is provided in the base plate 11 two apertures or lug openings C through which suitable screws 15 are introduced thereby to rigidly hold the assembled device in desired position, the peg head being drilled with a suitable hole 16 to permit the passing therethrough of the string post 1, as shown in dotted lines, Fig. 2.

In order to provide perfect alinement and a good wearing surface for the string post 1, when under stringed tension, a metal washer 17 is located on the upper part of the peg head 13, Fig. 2, and is held in position by wood screws D.

Having thus described my invention, what I claim and desire to protect by Letters Patent is:—

1. In a stringed instrument, a member having a hole therein; a base plate fast on said member and having an opening registering with said hole; a string pin engaging with and in said hole and opening; a thumb key stem; a gear set engaging said base plate and operatively connecting said pin and stem; a housing; and removable means for holding said housing on said base plate over said gear set; said removable means being accessible while the base plate is fast in place on said member, whereby said housing is removable while said plate is fast in place on the member.

2. In a stringed instrument, a head having a hole therein; a plate on said head provided with a string pin opening; said plate being also provided with perforations and with apertures; means in said apertures and said head for holding the plate fast on the head; a housing disposed on said plate and provided with a stem opening; said housing also being provided with perforated lugs registered with said perforations; detachable means passing through said perforated lugs and perforations for holding said housing fast on the plate; said detachable means passing through said perforations being removable while the housing is in place and permitting the removal of the housing when said detachable means are removed, while the base plate is held fast in place on said head; a string pin in said hole and pin opening; a key stem in said stem opening; and gear means operatively connecting said pin and stem.

3. In a stringed instrument, a member having a hole therein; a base plate thereon having an opening registering with said hole; a string pin engaging with said plate and in said hole and opening and removable while said plate is fast in place on said member; a thumb key stem; a gear set operatively connecting said pin and stem and in part engaging said plate; fastening means holding said plate fast in place; and means independent of said fastening means for holding said set in place.

4. In a stringed instrument, a head having a hole therein, a single base plate fast on the head and provided with a string pin opening alined with said hole, a one piece string pin engaging with said plate rotatably disposed in said hole and said string pin opening, the intermediate part and outer part of the pin being small enough for withdrawal through said string pin opening while the base plate is still fast in place; detachable means for holding the string pin in place; a thumb key stem; and means carried by the plate for operatively connecting said pin and stem.

5. In a stringed instrument, a member having a hole therein; a base plate fast on the member; a string pin in said hole having a gear thereon; a thumb key stem having a pinion; and a gear set operatively connecting said gear and pinion and in part engaging with and carried by said plate; and means holding said gear set and pinion in place

and removable while said plate is fast in place on said member.

6. In a stringed instrument, a member having a hole therein; a plate fast on the member and provided with a string pin opening alined with said hole; a housing on said base having a thumb key opening alined with said pin opening; a one-piece string pin in said hole approximately the same diameter and removable from said hole, the inner end of the pin having an inset axial bore and a small integral spur gear cut thereon; a thumb key stem rotatably received in said bore and having an outer projecting shank, a bearing portion rotatable in said thumb key opening; and a gear set carried by said base plate and operatively connecting said gear and pinion.

7. In a stringed instrument, a member having a hole therein; a single plate fast on the member having a bearing opening and provided with a string pin opening alined with said hole; a housing on said base having a bearing opening and provided with a thumb key opening alined with said pin opening; means removable while the base plate is in place for holding the housing in place; a one-piece string pin in said hole and of a smaller chamber than the hole, whereby it is removable endwise; the inner end of the pin having an inset axial bore and a small integral spur gear cut thereon of larger diameter than the pin; a thumb key stem rotatably received in said bore and having an outer projecting shank, an enlarged bearing portion rotatable in said thumb key opening, and a spur pinion disposed between said gear and housing; a thumb piece rigidly attached to said shank with its inner end bearing against said housing and enlarged bearing portion; and a gear set in said housing comprising alined studs rotatably received in said bearing openings, and a gear and pinion rigidly assembled together and meshing with said spur pinion and spur gear respectively.

8. In a stringed instrument, a member having a hole therein; a plate fast on the member provided with a string pin opening alined with said hole; a housing provided with a thumb key opening alined with said pin opening; means removable while the base plate is in place on said member, for holding said housing fast on the plate; a string pin in said hole removable while said plate is in place; the inner end of the pin having an inset axial bore and a gear thereon; a thumb key stem rotatably received in said bore and having an outer shank and a spur pinion; a thumb piece attached to said shank; and a gear set in said housing comprising rigidly assembled gear members meshing with said spur pinion and spur gear respectively, and removable while said plate is in place fast on said head.

9. In a stringed instrument, a member having a hole therein; bearing plates on both faces of said member having openings alined therewith, the member being between said plates; a string pin in said hole and both of said openings and having a string-receiving free end projecting remote from said member; a thumb key stem; and a gear set carried on said member and operatively connecting said pin and stem.

10. In a stringed instrument, a member of a single thickness of material having a hole passing therethrough; a washer fast on one face of the member alined with said hole; a plate fast on the other face of the member provided with a string pin opening alined with said hole and washer; the member being between said washer and plate; a one-piece string pin rotatably disposed in said hole, said string pin opening and said washer, and having its outer end apertured and projecting free a distance from the washer; a thumb key stem having a pinion; and a gear set operatively connecting said pin and stem.

11. In a stringed instrument, a member having a hole therein; a base plate lying all in a single plane fast on one face of said member and provided with a string pin opening alined with said hole; a one piece string pin engaging in said hole and opening and removable endwise thereof when said plate is in place; and having an integral gear thereon; a stem having a pinion; and a gear set carried by said base plate and operatively connecting said gear and pinion.

12. In a stringed instrument, a member having a hole therein; a single base plate entirely exterior to said hole and lying fast on one face of said member and provided with a string pin opening alined with said hole; a string pin engaging in said hole and opening and having a gear thereon; a stem having a pinion; and a gear set carried by said base plate and operatively connecting said gear and pinion.

13. In a stringed instrument, a head having a hole therein; a base plate having all parts thereof entirely exterior to said hole; said plate lying all in a single plane fast on one face of said head and being provided with a string pin opening alined with said hole; a one piece string pin engaging in said hole and having an integral gear thereon engaging said base plate; a thumb key stem having a pinion; and a gear set carried by said base plate and operatively connecting said gear and pinion.

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