July 4, 1950 D. J. DICKERSON 2,514,315

APPARATUS FOR TUNING STRINGED MUSICAL INSTRUMENTS

Filed July 11, 1949

Fig. 1.

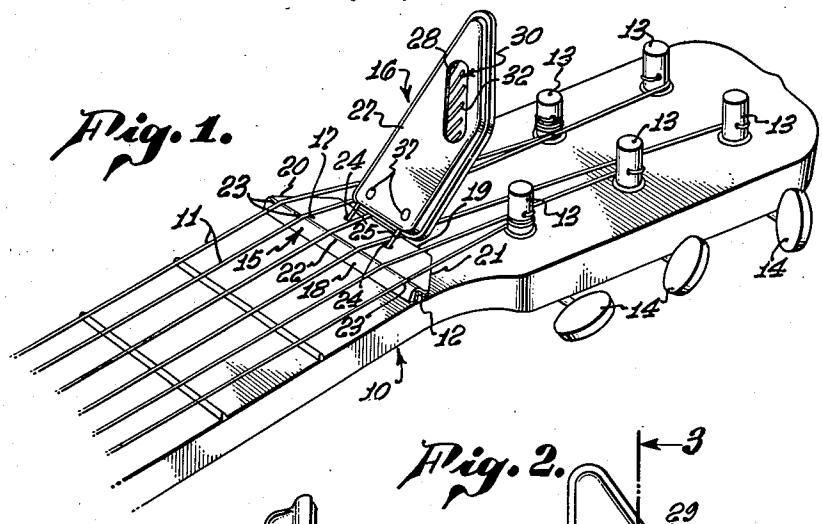


Fig. 2.

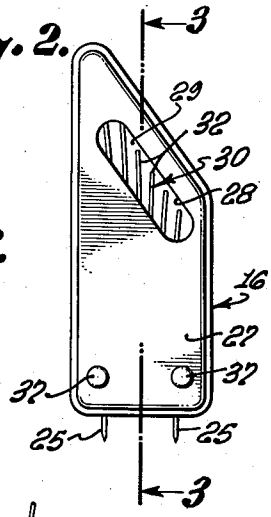


Fig. 3.

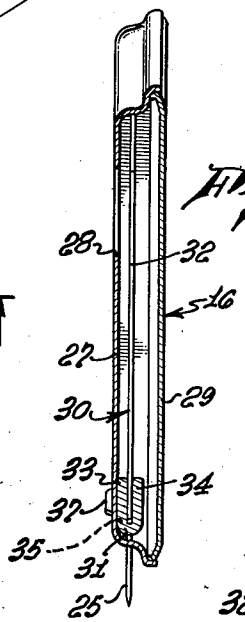


Fig. 4.

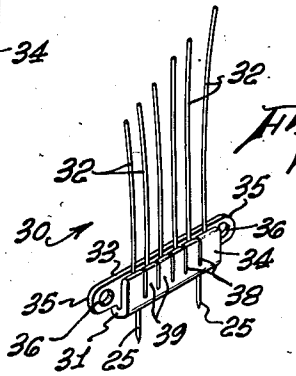


Fig. 5.

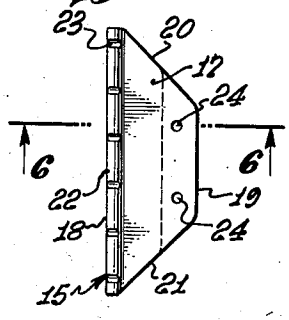
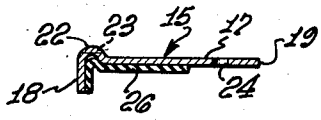


Fig. 6.



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APPARATUS FOR TUNING STRINGED MUSICAL INSTRUMENTS

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2 Claims. (Cl. 84—312)

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This invention relates generally to improved apparatus for tuning musical instruments and particularly for tuning stringed instruments such as guitars.

In employing any vibration responsive device for indicating when a particular string of a musical instrument is correctly tuned, it is desirable, for maximum effectiveness, to render the device as sensitive as possible to the string vibrations. With this in mind, a major object of the present invention is to provide highly effective sound pick-up means by virtue of which such vibrations may be transmitted or conducted from the strings of an instrument directly to a tuning device with a minimum loss in intensity.

In instruments of the class with which we are here concerned, the playing strings are usually supported at one end by a transversely extending ridge or bridge. In accordance with the invention, I attain maximum sensitivity in a sound pick-up device by employing novel means at the location of this string carrying bridge for supporting the strings resiliently and in a manner permitting appreciable vibration at the support locations. These vibrations are then transmitted directly to the tuning device by the support itself.

Preferably, the strings are resiliently supported in the defined manner by an insert receivable between the playing strings of the instrument and the bridge. This insert may include a resilient cushion of rubber or the like engageable with the bridge, together with a vibratable plate directly engaging the strings and adapted to carry a vibration responsive tuning assembly.

The above and further features and objects of the present invention will be better understood from the following detailed description of the typical embodiment illustrated in the accompanying drawing, in which:

Fig. 1 is a perspective view showing the present apparatus applied to a guitar;

Fig. 2 is a front elevational view of the removable tuning assembly;

Fig. 3 is an enlarged vertical section through the tuning assembly and taken on line 3—3 of Fig. 2;

Fig. 4 is a perspective view of the reed unit in Fig. 2;

Fig. 5 is a plan view of the sound pickup device; and

Fig. 6 is a transverse section through the sound pickup device taken on line 6—6 of Fig. 5.

Referring first to Fig. 1, I have illustrated the present tuning apparatus as applied to a guiter having a body 10 and carrying the usual playing

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strings 11. These strings pass over a supporting ridge or bridge 12 for retention at one end by the usual tuning pegs 13.

The tuning apparatus itself comprises two sections, including a sound pickup insert 15 to be carried between bridge 12 and the playing strings, and a sound responsive tuning assembly 16 adapted to be removably carried by the insert during a tuning operation. As best seen in Figs. 5 and 6, the insert comprises an upper vibratable plate 17 formed of metal or the like for most effective sound transmission and having on its under surface a rubber cushion 26 for engaging the bridge to resiliently support the plate and strings. Plate 17 and cushion 26 are secured together in any suitable manner, as by cementing. The plate is of trapezoidal configuration, having two parallel edges 18 and 19 and two converging edges 20 and 21. Along edge 18, the plate is curved first upwardly and then downwardly to present a bead 22 to be received over the edge of bridge 12 for locating the insert relative to the bridge. Along the upper surface of bead 22 the plate is grooved at spaced locations 23 for receiving and locating strings 11. Near edge 19, the plate contains a pair of spaced openings 24 for receiving similarly spaced pins 25 on the tuning assembly 16 to permit the tuning assembly to be temporarily "plugged in" to the insert during a tuning operation.

The tuning assembly has a housing 27 with an angularly disposed sight opening 28 on its front side and having a removable back cover 29. Within this housing, I provide the reed unit 30 illustrated in Fig. 4, which comprises a clamp member 31, attached depending pins 25, and a number of reeds 32 each adapted to vibrate freely at a frequency corresponding to the correctly tuned frequency of one of the strings 11. Clamp member 31 is formed of a strip of sheet material doubled back upon itself to present two overlying portions 33 and 34 between which the ends of the various reeds are clamped. Portion 33 of the clamp has a pair of ears 35 at its ends provided with openings 36 for attachment to housing 27 by fasteners 37. Portion 34 of the clamp contains a series of spaced slots 38 dividing it into a number of fingers 39 adapted to individually retain the various reeds. Depending pins 25 are secured to the clamp in any convenient manner.

In use, insert 15 is applied to the instrument between the bridge and strings in the illustrated manner and remains in that position at all times. With the insert thus applied, cushion 26 serves

to resiliently support plate 17 and the strings in a manner permitting appreciable vibration of both the strings and the plate at the support locations. When it is desired to tune the instrument, the tuning assembly 16 is attached to the insert by reception of pins 25 within openings 24 to pick up directly the vibrations of plate 17. When one of the strings 11 is correctly tuned, the corresponding reed of the tuning assembly will vibrate freely as the string is plucked to serve as a visual indication of correct tuning.

As will be understood, the plate 17 tends to vibrate in accordance with the vibrations of one of the plucked strings by virtue of the string and plate engagement at the bridge. The plate having a free edge 19 assumes an oscillating vibration from its anchorage at the bridge, and consequently may tend to amplify the vibrations as its dimension away from the bridge increases. Such vibration in turn is transmitted by the pins 25 to the housing 29 and clamp 31, to the reeds 32, and, since the vibration fulcrum is at the bridge, in a manner such that as ultimately received by the reeds, the vibration transmission is angularly of the reeds. In this connection it may be mentioned that the pins 25 and openings 24 may be made to accommodate the tuning instrument at any desired angularity relation to the plate 17. As shown, the body of the instrument is substantially normal to the plate.

I claim:

1. In a musical instrument having a plurality of strings passing over a bridge, means on said bridge resiliently supporting the strings and permitting appreciable vibration thereof at the support locations, said means including means adapted to vibrate with said strings, and a vibration responsive assembly connected to said last mentioned means for indicating when a musical tone produced by one of the strings is a predetermined pitch.

2. For use with a musical instrument having a plurality of strings passing over a bridge, an insert to be placed between said bridge and strings and resiliently supporting the strings to permit appreciable vibration thereof at the support locations, said insert including means adapted to vibrate with said strings, and a vibration responsive assembly connected by said means for indicating when a musical tone produced by one of the strings is a predetermined pitch.

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