April 12, 1949. H. HISE ET AL 2,467,086

STRINGED MUSICAL INSTRUMENT

Filed Nov. 12, 1946

Fig. 1

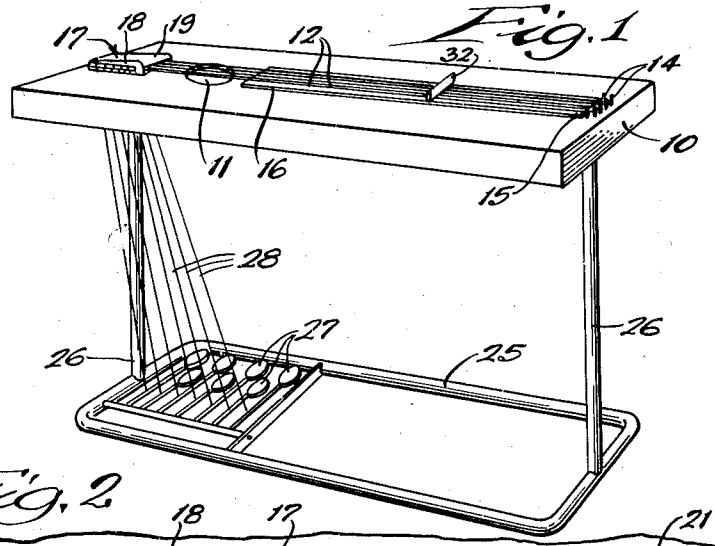


Fig. 2

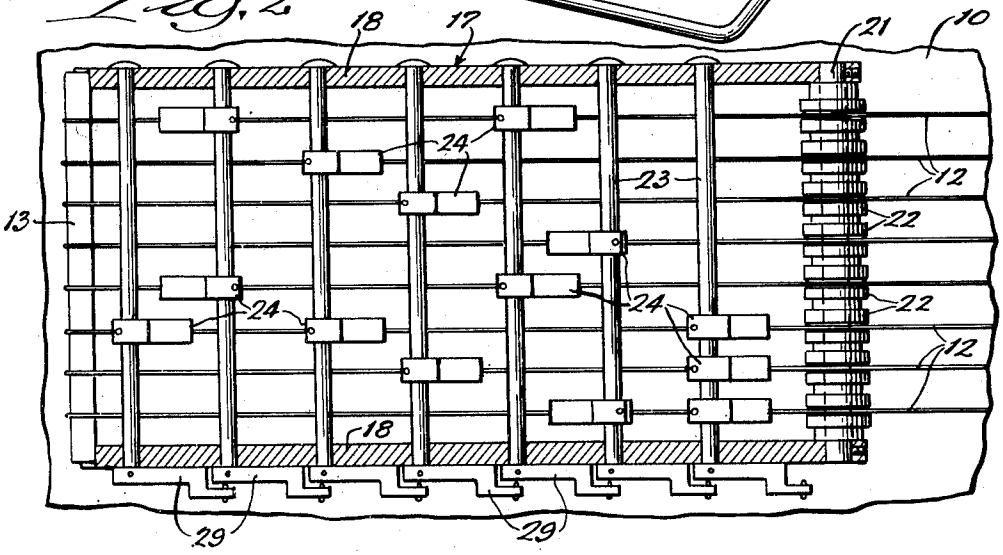
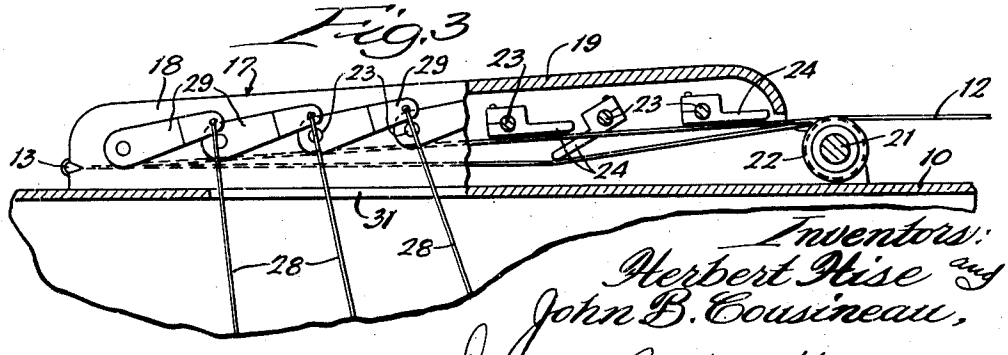


Fig. 3



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Patented Apr. 12, 1949

2,467,086

UNITED STATES PATENT OFFICE

2,467,086

STRINGED MUSICAL INSTRUMENT

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Application November 12, 1946, Serial No. 709,382

3 Claims. (Cl. 84—297)

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This invention relates to stringed musical instruments and more particularly to guitar type instruments to be played with a steel movable along the strings to change the effective length.

Steel guitars of the type used with electrical amplification comprise a plurality of strings which are played by moving a steel along their length in engagement with all of the strings and which are plucked or strummed adjacent one of the bridge members. In tuning the instrument, it is necessary that the strings be given a fixed cord tuning which can be changed only to a very limited extent by placing the steel at an angle to the string length. Therefore, to play cords or partial cords other than that to which the strings are tuned, it is necessary selectively to pluck the strings.

It is one of the objects of the present invention to provide a stringed musical instrument in which the cord tuning of the strings can be easily and quickly changed during play.

Another object is to provide a stringed musical instrument in which the string tension can be selectively and temporarily varied to vary the cord tuning.

Still another object is to provide a stringed musical instrument in which the cord tune can be temporarily changed by pressing the desired one of a plurality of foot pedals on the instrument.

A further object is to provide a stringed musical instrument in which the friction between the strings and the bridge members is minimized so that the tension of the strings can be changed uniformly and with a minimum of effort to vary their tuning.

The above and other objects and advantages of the invention will be more readily apparent from the following description when read in connection with the accompanying drawing, in which—

Figure 1 is a perspective view of a stringed instrument of the guitar type embodying the invention;

Figure 2 is a top view, with parts in section, of the string tension changing mechanism; and

Figure 3 is a partial side view of the tension changing mechanism with parts in section.

The instrument, as illustrated, comprises an ellongated support 10 which, as shown, is generally rectangular and is in the form of a hollow box to provide a resonant chamber. Preferably, the support is formed with an opening 11 spaced from one end across which the strings may extend so that the resonant characteristics of the support will be fully effective. A plurality of parallel strings 12 extend lengthwise of the support and are fastened at their opposite ends to a connecting bar 13 and to adjustable pins 14 by which the tension of the strings can be initially adjusted. Adjacent the pins 14, the strings extend over a fixed bridge member 15 to hold them spaced from the support in the usual manner. If desired, a fret board 16 may underlie the strings throughout at least a portion of the length.

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At a point spaced from the fastening bar 13, the strings extend over a second bridge member which forms a part of a string tension varying assembly indicated generally at 17. As shown, the assembly 17 comprises a pair of side plates 18 extending vertically upward from the support and carrying a cover plate 19 which extends over the tops of the side plates leaving an opening in the front. A shaft 21 is carried between the side plates adjacent the front thereof and rotatably supports a plurality of rollers 22. The rollers are equal in number to the strings and each roller engages and supports one of the strings so that when the string tension is varied, the rollers can turn freely on the shaft. This construction minimizes the friction between the strings and the bridge member so that the string tension can be varied easily and uniformly.

In order to vary the string tension during play of the instrument, a plurality of shafts 23 are rotatably mounted between the side plates 18 at points spaced between the anchor bar 13 and the bridge member. Each of the shafts has mounted thereon one or more finger members 24 which extend laterally from the shafts to engage selected ones of the strings so that as the shafts are turned, the strings engaged by the finger members will be deflected laterally to vary their tension. As seen in Figure 2, the finger members on the different shafts may engage different string combinations so that movement of any one of the shafts will vary the tension of certain of the strings to change the string tuning to a desired extent. Preferably, the finger members are mounted on the shafts for both axial and rotatable adjustment so that the strings to be effected by the respective shafts can easily be changed, and, further, so that the change in tension of each selected string can be adjusted to any desired amount.

For certain cord changes, it may be desired to increase the tension of one or more strings, while for others, the tension of selected strings should be decreased. This can be accomplished, according to the invention, by having certain of

the fingers extend in one direction from the shafts, while others extend in the opposite direction. Since the shafts are all turned in the same direction, as described hereinafter, the first-named fingers may increase the string tension, while the second-named fingers will release the strings to reduce their tension. In this manner, substantially any desired tuning combinations can be obtained so that an instrument initially tuned, for example to a major cord, can be easily retuned to play a minor, a seventh, an augmented cord, or any other desired cord tuning.

In use, the support is carried by a flange which holds the support in a horizontal position above the floor at a convenient height for playing. As shown, the frame comprises a rectangular base **25** which may conveniently be formed of pipe or the like and which has two uprights **26** at its opposite ends. The uprights may be conveniently fitted removably into sockets at their base at their lower ends, and at their upper ends may fit into similar sockets in the support so that the entire assembly can easily be taken down for transportation or storage.

The string tension and consequently the tuning of the instrument may conveniently be controlled by a series of foot pedals **27** pivoted on the base **25** and spaced so that an operator can conveniently depress a selected one or more of the pedals. The pedals are adapted to be connected by rods or wires **28** to levers **29** secured to the shafts **23** and lying adjacent the outer surface of one of the side plates **18**. The rods or wires **28** may extend through a slot **31** in the support and are preferably connected to the levers **29** and pedals **27** by hooks at their end portions so that they can easily be removed for dismantling the instrument. The pedals may be urged upward by springs or the like, not shown, so that in the normal position of the instrument, the fingers **24** which normally depress the strings will be held down and will be moved up to release the strings when the corresponding pedal is depressed.

In use of the instrument, play is accomplished in the usual manner by moving a steel **32** along the strings to change their effective length but without changing their relative tuning. Thus, if the strings are initially tuned to a major cord, they will play a major cord in all positions of the steel although the pitch of the cord will be altered. To change a cord at any time during play, for example to a minor or a seventh, the selected one of the pedals **27** may be depressed to change the tension of the desired one or more of the strings. The instrument will then produce the modified cord in all positions of the steel when all of the strings are played. It will be apparent that various cord combinations can be produced by simultaneously depressing two or more of the pedals so that an extremely flexible instrument is provided with a relatively small number of pedals.

While one embodiment of the invention has been shown and described in detail, it will be understood that it is illustrative only and is not intended to be a definition of the scope of the invention, reference being had for this purpose to the appended claims.

What is claimed is:

1. A stringed musical instrument comprising an elongated support, bridge members spaced lengthwise of the support, strings extending over the bridge members and fastened to the support beyond the bridge members, a rotatable shaft extending across the strings at a point between one of the bridge members and the adjacent points of connection of the strings to the support, means to turn the shaft, and a finger adjustably mounted on the shaft to engage one of the strings to vary its tension as the shaft is turned.

2. A stringed musical instrument comprising an elongated support, a frame to rest on a floor and to carry the support in a horizontal position above the floor, bridge members spaced lengthwise of the support, strings extending over the bridge members and fastened to the support beyond the bridge members, a plurality of parallel shafts extending across the strings between one of the bridge members, and the adjacent points of connection of the strings to the support, fingers adjustably mounted on the shafts engaging certain of the strings to vary their tension as the shafts are turned, a plurality of pedals pivoted on the frame, and connections between the shafts and pedals respectively to turn the shafts when the pedals are depressed.

3. A stringed musical instrument comprising an elongated support, a frame to rest on a floor and to carry the support in a horizontal position above the floor, bridge members spaced lengthwise of the support, strings extending over the bridge members and fastened to the support beyond the bridge members, a plurality of parallel shafts extending across the strings between one of the bridge members, and the adjacent points of connection of the strings to the support, fingers mounted on the shafts for axial and rotatable adjustment thereon to engage certain selected ones of the strings and vary their tension as the shafts are turned, and means selectively to turn the shafts.

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