United States Patent [19]

Muncy

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[54] **GUITAR FRET BOARD**

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[52] **U.S. Cl.** **84/314**
[51] **Int. Cl.** **G10d 3/06**
[58] **Field of Search** 84/314

[56] **References Cited**

UNITED STATES PATENTS

281,584	7/1883	VanHaagen	84/314
1,188,983	6/1916	Nonfri	84/314 X
1,599,184	9/1926	Polychronis	84/314
2,816,469	12/1957	Gossom	84/314 X
3,481,238	12/1969	Veres	84/314 X

Primary Examiner—Lawrence R. Franklin
Attorney, Agent, or Firm—Lawrence B. Biebel et al.

[57] **ABSTRACT**

A guitar provided with an improved fret board construction for easy fingering and faster action, in which grooves are formed in underlying relation to the strings, the diameter of the grooves being related to that of the strings so that when a string is depressed in the groove approximately 80 percent of the string is received in the groove. The grooves undulate from high regions at the fret to depressed regions between the frets to provide portions which slope away from the frets defining fingering regions. The metal frets are formed with essentially the same configuration as that of the fret board in that the exposed surfaces are flush with the fret board at the bottom of the groove, so that when the string is fingered there is a minimum of protrusion of the string and thus a minimum of discomfort. The increased action is due to the absence of obstacles by reason of absence of protruding frets.

14 Claims, 5 Drawing Figures

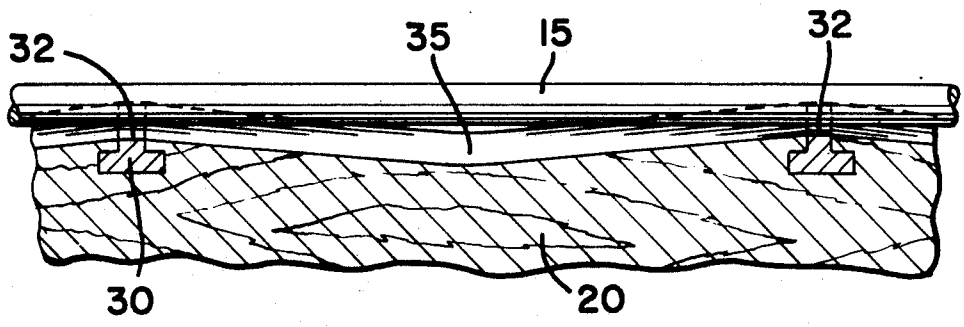


FIG-1

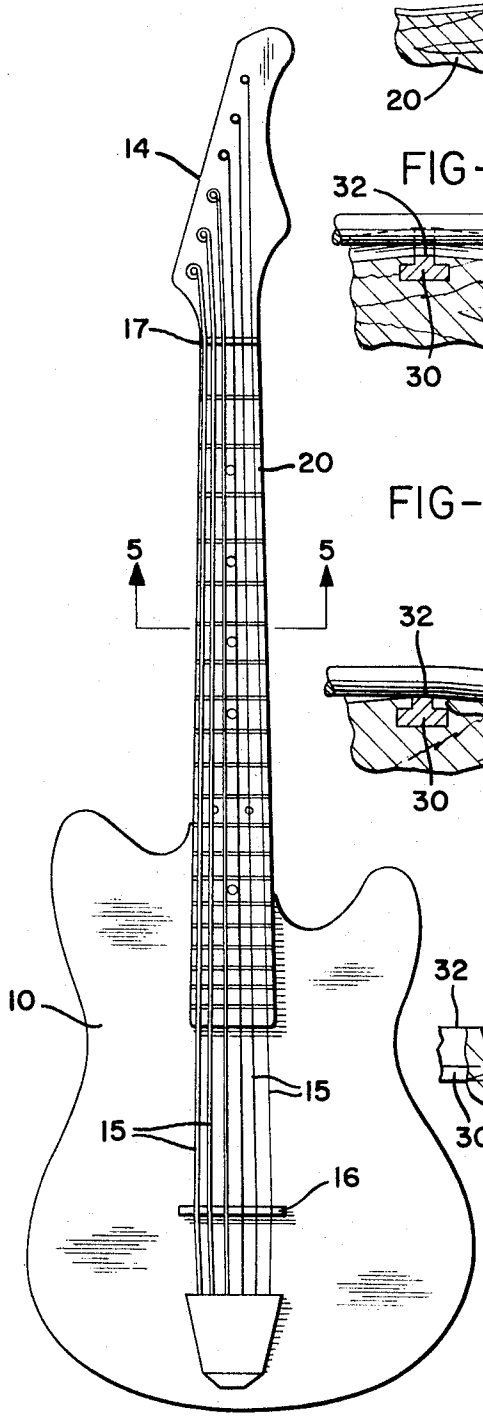


FIG-2

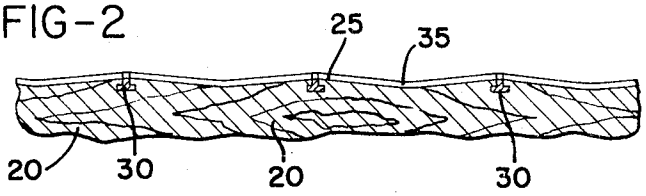


FIG-3

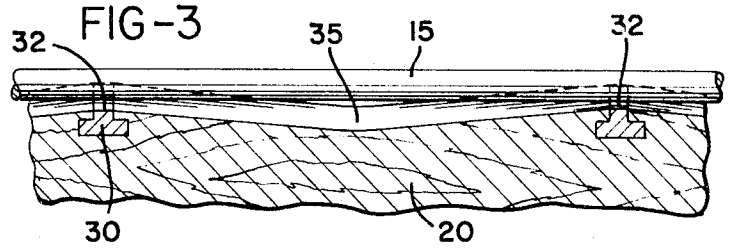


FIG-4

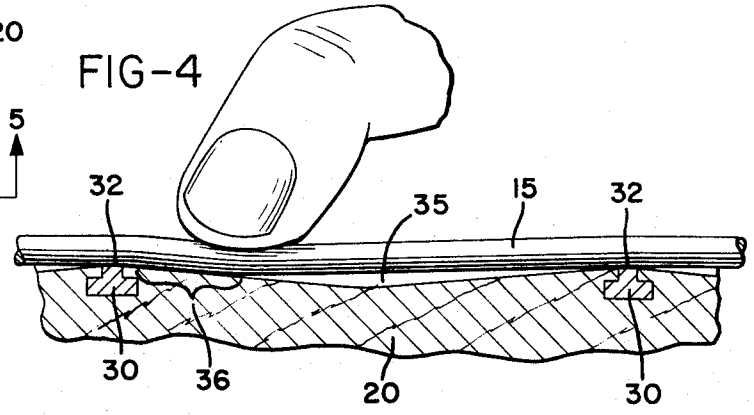
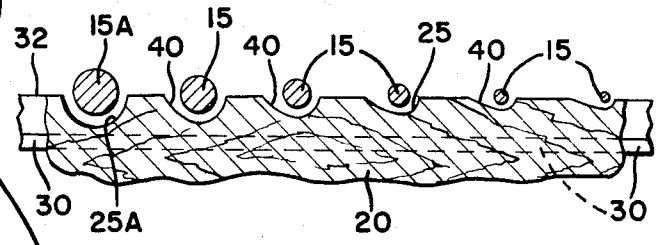


FIG-5



GUITAR FRET BOARD

BACKGROUND OF THE INVENTION

This invention relates to stringed instruments and more particularly such instruments in which the strings are positioned over a fret board such as a guitar, banjo, and the like. It is well-known that the fingering of such an instrument causes a certain amount of pain and discomfort by reason of the depression of the string into the finger, as the string is brought down by the finger action into the engagement with the fret. There has been in the past numerous attempts to improve the fingering action of such stringed instruments, and/or make the instrument more comfortable to play. An earlier arrangement is shown in the Van Haagen U.S. Pat. No. 281,584 of 1883, in which grooves were formed in the fret board in combination with raised frets. Both continuous and discontinuous grooves were disclosed.

The Nonfri, U.S. Pat. No. 1,188,983 of 1916, shows combinations of finger recesses and conventionally raised frets to provide a combination mandolin and guitar.

The Gossom, U.S. Pat. No. 2,816,469 of 1957, discloses transversely depressed regions formed between conventional frets. A somewhat similar arrangement of transverse grooves and conventional frets is shown in the Veres, U.S. Pat. No. 3,481,238 of 1969. Further transversely grooved finger boards are shown in the Middlebrooke U.S. Pat. No. 463,954 of 1891 and in the Shaeffer, U.S. Pat. No. 1,472,943 of 1923.

SUMMARY OF THE INVENTION

The present invention overcomes the deficiencies of the arrangements described above in that it provides undulating grooves in underlying relation to the strings, and frets which are formed substantially flush to the exposed surfaces of the grooves. In the preferred embodiment, a substantial portion of the string is received within the groove when it is depressed, which portion may be in the order of 80 percent, so that only a minor portion of the string is depressed into the finger. I have found that the employment of continuous, full-length longitudinal grooves in combination with substantially non-protruding frets on a uniform undulating surface provides fast fingering action and substantially painless fingering. In my preferred embodiment, I employ semicircular grooves, and frets which are dimensionally related to the respective diameter of the strings, which grooves undulate from high points at the frets to depressed regions between the frets.

It is an object of my invention to provide a fret board for a stringed instrument which has improved fingering action and which is substantially painless to play.

An important object of my invention is the provision of a fret board as outlined above, in which the exposed surface of the frets are substantially flush with the string grooves.

These and other objects and advantages of the invention will become apparent from the following description, the accompanying drawings and the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view of a guitar embodying my invention;

FIG. 2 is an enlarged longitudinal fragmentary section taken through the neck and along one of the grooves;

FIG. 3 is an enlarged fragmentary section of a portion of the neck and string;

FIG. 4 is a view similar to FIG. 3, showing the manner in which a finger presses the string within the groove and against the fret; and

FIG. 5 is a transverse fragmentary section through the neck taken generally along the line 5—5 of FIG. 1.

DESCRIPTION OF PREFERRED EMBODIMENT

A guitar having a neck made according to the present invention as illustrated in FIG. 1 is included in the conventional body or base **10**, neck **12**, and head **14**. While the invention is shown as being applied to a guitar, it is understood that the same may be applied to similar stringed instruments incorporating a neck having spaced frets.

The guitar includes conventional strings **15** which extend between the bridge **16** and the nut **17** in overlying relation to the fret board portion **20** of the neck **12**. The fret board **20** may be formed as an overlay separate from the neck **12** or may be formed integrally with the neck.

The fret board portion of the neck **20** is formed with plurality grooves **25**, for each of the strings, with each groove being positioned in underlying relation to one of the strings substantially as shown in FIG. **5**. Preferably, the grooves **25** are related in diameter to the respective diameters of the strings, so that each groove is formed with a depth which equals approximately 80 percent of the diameter of its associated string.

The fret board **20** is also provided with a plurality of transversely extending, longitudinally spaced imbedded metal frets **30**. The frets **30** have upper surfaces **32** which conform to the upper surfaces of the board **20** and thus similarly are provided with semi-circular openings or recesses conforming to the configuration of the grooves **25**, so that the exposed upper surface portion of the frets are flush with the fret board in the region of the grooves. Preferably, the grooving of the board and the frets is accomplished in a single operation by a suitable routing tool, so that the extended grooves are formed continuously along the upper surface of the board and through the imbedded frets **30**. The depth of each groove **25** is less than the diameter of the associated string and preferably exceeds the radius of the string. Also I prefer to form one groove **25** for each string **15**.

The upper surface of the board **20** is formed with slight periodic transversely-oriented undulations which rise at high points defined in the region of the fret and low points substantially midway between the frets. Preferably, the entire upper surface is undulated in this manner, and the grooves **25** continue along the undulated surface at a constant depth throughout forming an obtuse angle in the exposed surface with the apex at the region of the frets. The included angle may be in the order of 170°–188° with the result that a slightly depressed region **35** (FIG. **45**) is formed in the region between a pair of frets **30**. This results in a small portion of the board behind each fret sloping uniformly away from the string in a fingering region as identified by the bracket **36** in FIG. **4**.

While I have shown the surface undulation in the form of a series of shallow V-shaped depressions, it is within the scope of my invention to utilize other forms of undulations, such as sine wave form.

The individual grooves **25** may be semi-circular in cross section as indicated by the groove **25A** for the bass string **15A**. However, I prefer to form one side wall **40** of the grooves with an angle which is tangent at the bottom of the groove and which slopes up to the surface of the board, thus blending out at a point approximately midway between the string-to-string separation, as shown in FIG. **5**. The angles **40** thus formed at one side of the strings permits the player to bend the string slightly out of the bottom of the associated groove **25** for the purpose of providing special effects, such as smearing or stretching the notes or chords. The angles **40** may extend the full lengths of the grooves along the board. However, the angles **40** need not be provided for the bass string but only for the upper five strings.

When the string is fingered to provide a given note as shown in FIG. **4**, the string **15** is pressed into the associated groove **25** by applying pressure at the region **36** just upward of the fret, causing the string to bear against the exposed conforming fret surface **32**. In this condition, a substantial portion of the string is received with the groove resulting in only a small indention against the finger. This not only eliminates the discomfort of fingering the instrument but also provides a faster action since the string **15** may be quickly and easily fingered compared to that of conventional structures.

While the form of apparatus herein described constitutes a preferred embodiment of the invention, it is to be understood that the invention is not limited to this precise form of apparatus, and that changes may be made therein without departing from the scope of the invention which is defined in the appended claims.

What is claimed is:

1. A stringed instrument such as a guitar or the like have a neck forming a fret board and have a plurality of underlying strings, the improvement comprising means on said fret board defining plurality of longitudinally spaced frets imbedded in said board, means defining plurality of longitudinally extending grooves in said fret board one each in underlying relation to one of the said strings so that each said string is partially received in one of the said grooves, said frets being formed substantially flush with said board at said grooves, and a fingering portion of said board positioned longitudinally behind each said fret sloping away from the overlying strings to permit the strings to be depressed into their respective underlying grooves and into engagement with the exposed upper portion of the adjacent said fret with a substantial diameter of the string being received in said groove to provide painless fingering.

2. The instrument of claim **1** in which the depth of said groove in said fingering position is approximately 80 percent of the diameter of the associated string.

3. The instrument of claim **1** in which said fingering portions are defined by a shallow V-shaped transversely oriented depression between said frets.

4. The instrument of claim **1** in which said frets have transverse surfaces which are flush at all transverse regions with the adjacent surfaces of said fret boards.

5. The instrument of claim **4** wherein each said groove extends longitudinally on said fret board at a depth which remains constant with respect to the surface of said board.

6. The instrument of claim **5** wherein each said groove defines a semi-circle in cross section.

7. An improved fret board construction for a guitar to provide painless fingering and faster fingering action, comprising means in the fret board defining a plurality of longitudinally extending grooves, said grooves being formed in underlying relation to the strings so that one groove is in underlying relation to each string, a plurality of metal frets in said grooves having string-engaging exposed surfaces substantially flush with the bottom surfaces of said grooves, and means defining transverse depressions on said board positioned upward of each said fret providing a region for the application of finger pressure to the string to cause the string to bear in its groove adjacent on exposed fret surface.

8. The fret board of claim **7** in which the depth of said groove at said depressions is less than the diameter of said string.

9. The fret board of claim **8** in which said depth exceeds the radius of said string.

10. The fret board of claim **7** in which there is provided one of said grooves for each said string and in which the depths of said groove are directly related to the diameters of said strings.

11. The fret board of claim **10** in which said grooves are semi-circle in section.

12. The fret board of claim **7** in which said grooves undulate from a high region at each said fret to a depressed region between said frets.

13. The fret board of claim **12** in which said undulations form a shall V-shaped depression in longitudinal section.

14. The fret board of claim **10** in which at least some of said grooves are formed with a side wall which slopes from the groove bottom to the board surface at a point substantially midway between the adjacent strings to permit the string to be bent slightly out of the groove.

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