April 5, 1932. J. A. NICHOLS 1,852,853

MUSICAL INSTRUMENT

Filed July 9, 1930 2 Sheets-Sheet 1

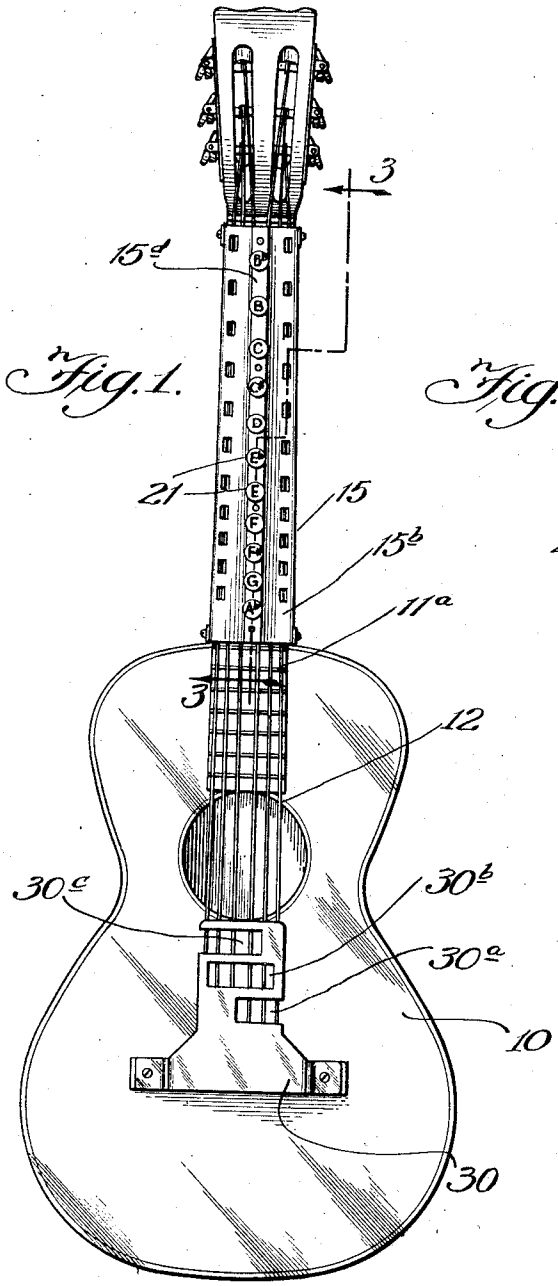

Fig. 1.

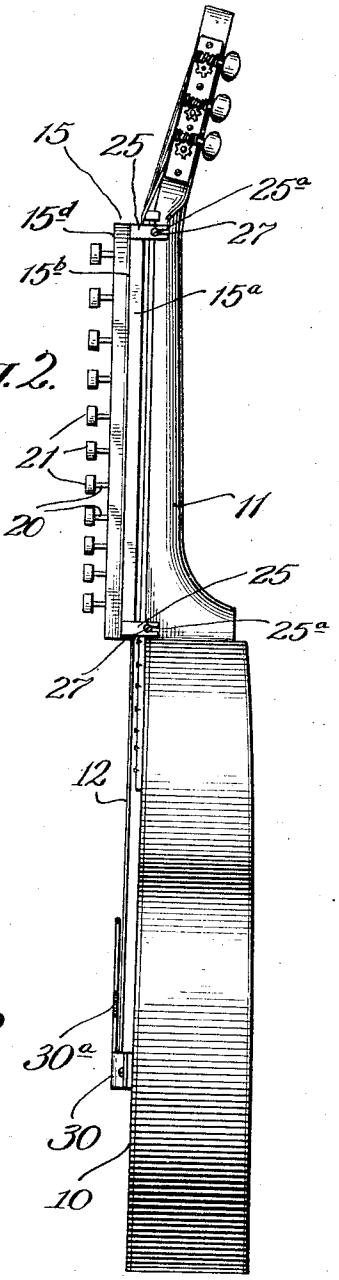

Fig. 2.

Inventor:
James Arthur Nichols.
By Williams, Bradbury, McCales & Hinkle.
Attys.

April 5, 1932. J. A. NICHOLS 1,852,853

MUSICAL INSTRUMENT

Filed July 9, 1930 2 Sheets-Sheet 2

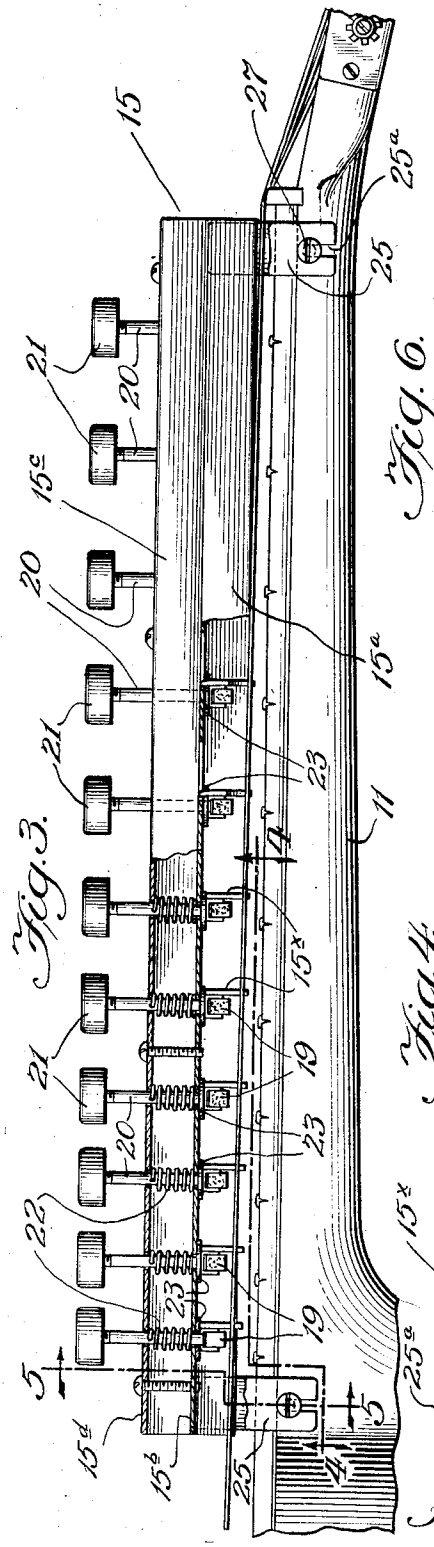

Fig. 3.

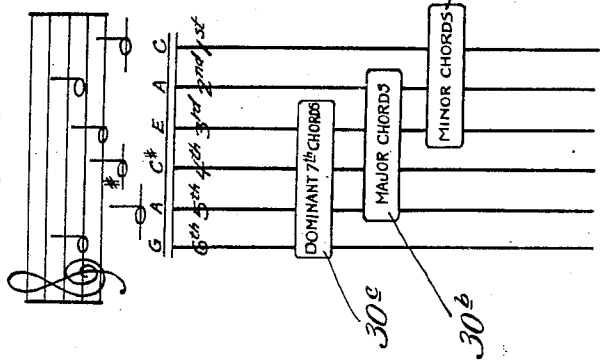

Fig. 6.

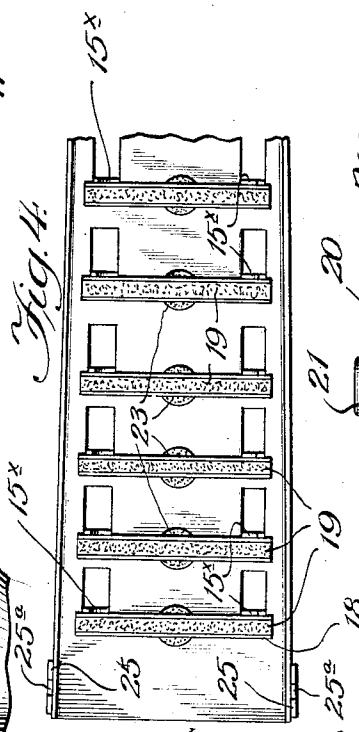

Fig. 4.

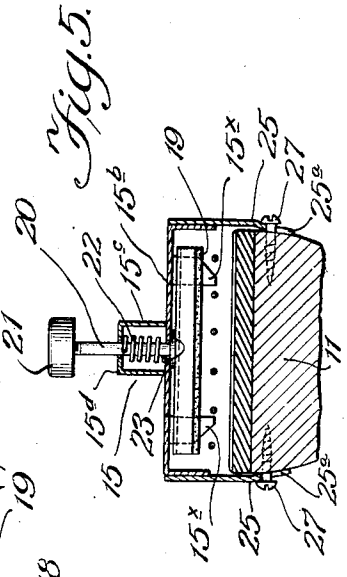

Fig. 5.

Inventor:
James Arthur Nichols
By Williams, Bradbury, McCaleb & Hinkle
Atty's.

Patented Apr. 5, 1932 1,852,853

UNITED STATES PATENT OFFICE

JAMES ARTHUR NICHOLS, OF WINDSOR, ONTARIO, CANADA, ASSIGNOR TO THE HARMONY COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS

MUSICAL INSTRUMENT

Application filed July 9, 1930. Serial No. 466,791.

My invention relates to improvements in musical instruments, and has for an object to provide a new chord stopping mechanism for use with stringed instruments by means of which a number of strings may be stopped for chord playing by the depression of a single button or the like, thus obviating the necessity of stopping a plurality of strings with the fingers as is necessary in ordinary manually played stringed instruments of the type of the guitar, ukulele, banjo, and others.

Another object of my invention is to provide an instrument of the character described in which the tuning of the strings is such that they are in harmonious or chord relation when open, and actuation of successive of the stopping members will raise or lower the chords produced by the stopped strings, when struck, by musical half tone intervals.

Another object consists in a stringed instrument of the character just described in which adjacent groups of the strings when open or stopped may be struck to produce either a major chord, a corresponding minor chord, or the corresponding seventh chord.

Still another object is the provision of a restricting member constructed and arranged to insure the playing of either group of associated chords at the will of the operator, so that unskillful manipulation of the striking finger or plectrum will not affect the accurate production of the desired minor, major or seventh chord as the case may be.

Another object consists in the provision of a chord stopping mechanism so constructed and arranged that single strings may be played for bass runs and melodic progressions or musical passages.

Another object resides in the provision of a stopping mechanism which is simple in construction and which may be readily applied to or detached from conventional stringed instruments.

Still another object is the provision of a chord stopping mechanism which may be adjustably mounted upon the neck of a stringed instrument for accommodation of varying heights of the strings.

These and other objects will be more fully set forth and described in the appended specification and illustrated in the accompanying drawings, in which

Fig. 1 is a plan view of a six stringed guitar embodying my invention;

Fig. 2 is a side elevation of the same;

Fig. 3 is the side elevation in partial section taken along the line 3—3 of Fig. 1, being on an enlarged scale;

Fig. 4 is a horizontal section along the regular line 4—4 of Figure 3;

Fig. 5 is a vertical section along the line 5—5 of Fig. 3; and

Fig. 6 is a diagrammatic illustration of one arrangement of tuning adapted for use with my invention.

Like numerals refer to like elements throughout the drawings.

10 indicates generally the shell or body portion of the musical instrument, a guitar in the form illustrated, although it should be clearly understood that my invention is adapted for use with other stringed instruments such as the ukulele, banjo, etc.

11 indicates the neck, and as is usual in such instruments, a plurality of spaced strings 12 are provided extending from suitable tuning elements over the neck and top of the body portion in spaced relation thereto. The neck 11 is provided with spaced frets 11*a*, but it should be understood that I may utilize my chord stopping mechanism with unfretted instruments and I utilize the term "stop points" as defining either frets or the points at which strings of a musical instrument would be pressed by the finger or otherwise to produce the desired note.

Chord stopping mechanism comprises a casing 15 of metal or other like material having the side walls 15*a* and top 15*b* extending upwardly of the casing 15, and running longitudinally thereof along the center portion is the hollow rib 15*c* provided with the top 15*d* (see Fig. 5 for example). From the top 15*b* in the casing 15 are struck out downwardly extending tongues 15*x* best illustrated in Figs. 3 to 5 inclusive, there being in the illustrated embodiment of my invention a pair of these tongues in spaced relation for each stop point of the strings which is availed of.

Extending transversely of the casing beneath the top wall 15*b* thereof is a plurality of transverse bars, each comprising an inverted channel shaped member 18 with an inserted protruding strip 19 preferably formed of sponge rubber or some such damping material where the instrument is to be played without special effect, such as would be sought with the Hawaiian guitar. These bars are each aligned transversely of the casing 15 in spaced relation corresponding to the distance between the stop points or frets of the instrument to which the mechanism is to be applied. Each of the bars lies adjacent a pair of the tongues 15*x*, and in a measure is guided thereby in its vertical movement.

Extending through the top wall 15*d* of the rib 15*c* and through the top wall 15*b* of the casing, is a plurality of rods or pins 20, one for each of the bar channels 18 to which it is attached. This arrangement provides a journaling for each of the rods or pins 20 and insures accurate movements for actuation of the corresponding bar. At the top of each of the pins 20 is a button 21 which carries a suitable mark as of the tonic note of the chord produced when corresponding bar is actuated.

To normally retain the bars out of contact with the subjacent strings, I provide coil springs 22 each being arranged around a corresponding pin 20 and having its upper end secured thereto, the lower end resting against the top 15*b* of the casing. I also find it desirable to interpose a spacing collar 23 between the top of each bar channel 18 and the under side of casing top wall 15*b*.

For attachment of the mechanism to the neck of a musical instrument, I provide depending wings or fins 25 which are slotted at 25*a* at the lower portions; these slots accommodate the inserted shanks of fastening screws 27 permitting some range of vertical adjustment of casing and mechanism relative to the strings and neck of the instrument, after which screws 27 may be driven tightly home.

I am able to utilize the extremely simple chord stopping mechanism described above by virtue of a tuning arrangement in which the strings when in open or unstopped condition are in harmonious or chord relation as I term it. With the strings in such relation stopping thereof at successive frets or stop-points below will result in raising the chords by half tone intervals. In other words, stopping of the strings at successive frets or stop-points will vary the tonal pitch of the resulting chords by half tone intervals.

For example, as illustrated in Fig. 6, a suitable tuning arrangement consists in tuning the strings respectively from the sixth to the first, as G, A, C-sharp, E, A, and C.

With such a tuning arrangement not only will the progressive harmonic chords result from depression of successive bars, but in each instance whether the strings be open or stopped, striking of the sixth, fifth, fourth and third strings will produce a dominant seventh chord; striking of the fifth, fourth, third and second strings will produce the corresponding major chord and striking of the third, second and first strings will produce the corresponding minor chord.

The tuning may be varied to produce the same results or to substitute diminished sevenths for the dominant sevenths in the embodiment described and illustrated if so desired.

To insure that the player will not strike other than the strings desired for the respective chord I provide a restricting member generally designated by the numeral 30, the same comprising a plate having the openings 30*a*, 30*b* and 30*c*. The main body in the plate 30 overlies and is spaced from the strings at or adjacent the point where it is desired to strike them with the fingers or a plectrum.

With the tuning arrangement described above, opening 30*a* exposes only the strings which produce the minor chords, opening 30*b* exposes only the strings utilized for the major chords, and opening 30*c* exposes only the strings for the seventh chords.

For use of the instrument and mechanism described above it is only necessary for the user to depress the button designated for the production of a certain chord, whereafter striking of either group of selected strings will produce either the seventh, major or minor chord desired.

This generally simplifies and renders comparatively easy the playing of a stringed instrument of this character, as it is only necessary for the user to acquaint himself with the location of the buttons for the desired chords, and sheet music may be readily adapted or augmented by simple indications to enable the user to play any selection desired.

With the comparatively simple arrangement illustrated it will be apparent that the actuating bars are in relation analogous to that of the frets or stop-points of the strings so that it is possible for the user to pick or strike single strings and to stop any of the strings to produce the desired note. This permits the skilled user to play bass runs or melodic progressions. Also, a single string tune or melody may be played as with the conventional instruments, it being merely necessary to depress the proper button rather than to stop the selected string with the finger.

It will be obvious that my invention is susceptible of modification and variation from the form illustrated and described, and I do not wish to be restricted thereto except as limited by the appended claims properly interpreted with respect to the prior art.

What I claim is:

1. In combination with a musical instrument comprising a plurality of tuned strings, chord stopping means comprising a plurality of bars arranged transversely of said strings, each adjacent a transverse row of stop-points of said strings and being movable into contact with said strings, said bars being separately actuatable to stop all of said strings requiring stopping for a desired chord at said stop-points.

2. In combination with a musical instrument comprising a plurality of tuned strings, chord stopping means comprising a plurality of bars arranged transversely of said strings, each adjacent a transverse row of stop-points of said strings, said bars being separately actuatable to stop said strings at said stop-points, said strings being tuned in harmonic relation when open whereby actuation of successive bars will raise or lower the tones of the stopped strings by half tone intervals.

3. In combination with a musical instrument comprising a plurality of tuned strings, chord stopping means comprising a plurality of bars arranged transversely of said strings, each adjacent a transverse row of stop-points of said strings, said bars being separately actuatable to stop said strings at said stop-points, said strings being tuned in harmonic relation when open whereby actuation of successive bars will raise or lower the tones of the stopped strings by half tone intervals, said strings additionally being so tuned that striking of certain groups thereof when in open or stopped condition, will produce either major, minor or seventh chords.

4. In combination with a musical instrument comprising a plurality of tuned strings, chord stopping means comprising a plurality of bars arranged transversely of said strings, each adjacent a transverse row of stop-points of said strings, said bars being separately actuatable to stop said strings at said stop-points, said strings being tuned in harmonic relation when open whereby actuation of successive bars will raise or lower the tones of the stopped strings by half tone intervals, said strings additionally being so tuned that striking of certain groups thereof when in open or stopped condition, will produce either major, minor, or seventh chords, means for insuring striking only of those strings necessary to produce the major, minor, or seventh chord as desired.

5. In combination with a musical instrument comprising a plurality of tuned strings, chord stopping means comprising a plurality of bars arranged transversely of said strings, each adjacent a transverse row of stop-points of said strings, said bars being separately actuatable to stop said strings at said stop-points, said strings being tuned in harmonic relation when open whereby actuation of successive bars will raise or lower the tones of the stopped strings by half tone intervals, said strings additionally being so tuned that striking of certain groups thereof when in open or stopped condition, will produce either major, minor, or seventh chords, means for insuring striking only of those strings necessary to produce the major, minor, or seventh chord as desired, said last named means comprising a restricting member having openings exposing only certain of said strings.

6. A mechanism of the class described, a carrier member, a plurality of transverse bars carried thereby and movable with respect thereto, means to guide said bars in their movement, said means comprising guide tongues, said tongues being formed from said carrier member.

7. Mechanism of the class described comprising a carrier member, a plurality of actuatable string stopping bars, each of said bars being formed of a channel shaped member and a contacting strip carried thereby.

8. Mechanism of the class described comprising a carrier member, a plurality of transversely arranged string stopping members, said members being channeled, strips of damping material carried in said channels, pins secured to and projecting from said members, and coil springs coacting with said pins and said carrier to resist movement of said bars from inoperative position.

9. Mechanism of the class described comprising a carrier member, a plurality of transversely arranged string stopping bars, a rib carried by said carrier member, pins secured to each of said bars, and journaled in said carrier member and rib.

10. Mechanism of the class described comprising a carrier member, a plurality of transversely arranged string stopping bars, a rib carried by said carrier member, pins secured to each of said bars, and journaled in said carrier member and rib, said carrier member being provided with guide means adjacent each of said bars.

11. A restricting member comprising a plate portion and attachable to a musical instrument, said plate portion being provided with openings constructed and arranged to overlie the portions to be struck of different groups of strings of said instrument.

In witness whereof, I hereunto subscribe my name this 21st day of June, 1930.

JAMES ARTHUR NICHOLS.