No. 853,536. PATENTED MAY 14, 1907.

C. F. DOUGHTON.

MUSICAL INSTRUMENT.

APPLICATION FILED MAY 18, 1906.

Fig. 1.

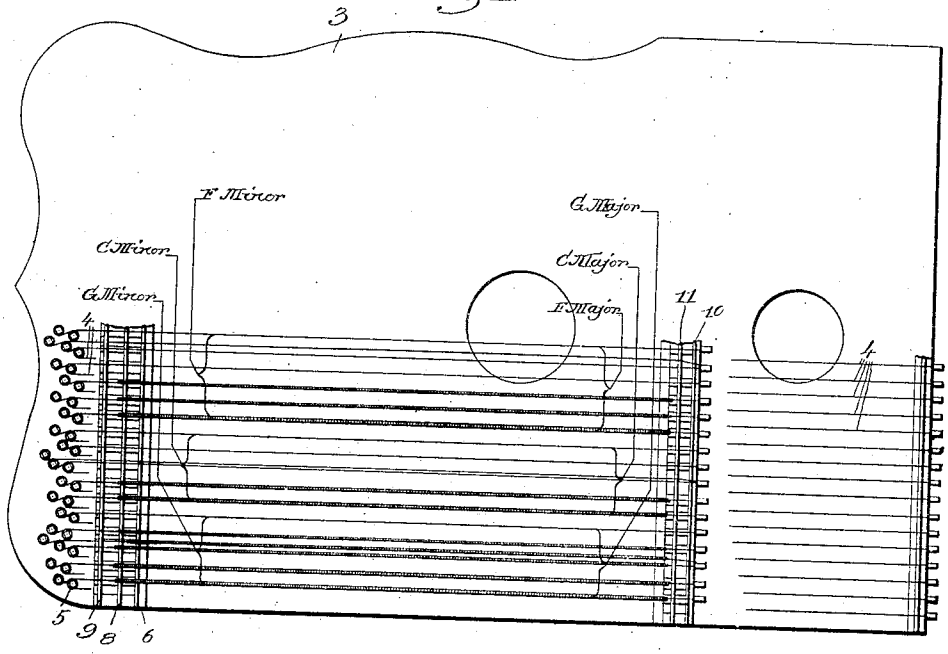


Fig. 2.

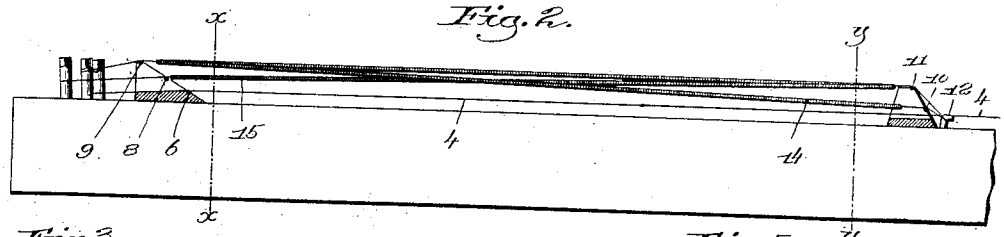


Fig. 3.

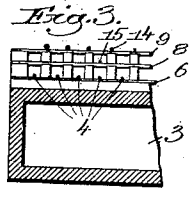


Fig. 4.

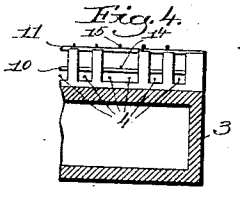


Fig. 5.

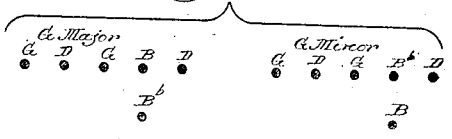


Fig. 6.

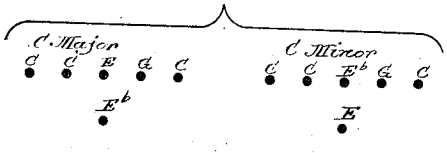
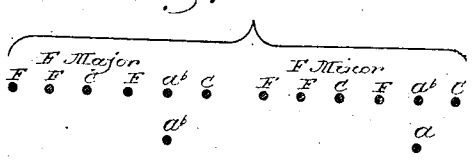


Fig. 7.



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UNITED STATES PATENT OFFICE.

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MUSICAL INSTRUMENT.

No. 853,536. Specification of Letters Patent. Patented May 14, 1907.

Application filed May 18, 1906. Serial No. 317,494.

To all whom it may concern:

Be it known that I, CHARLES F. DOUGHTON, a citizen of the United States, and a resident of Lebanon, in the county of Linn and State of Oregon, have invented an Improvement in Musical Instruments, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to a stringed musical instrument, and especially to an instrument of the zither class. In many stringed instruments of this class there are two series of strings, one series extending the full length of the instrument and constituting the strings on which the melody is played, and the other series being arranged in groups for the purpose of playing the chords. In an ordinary instrument of this class the groups for playing the chords are arranged side by side, and the number of chord-groups which can be used is limited by the width of the instrument. In most instruments five or six chord-groups are all that can be used, and as a result the number of different keys in which tunes may be played is limited.

The object of my invention is to provide a novel construction by means of which the number of chord-groups may be materially increased without increasing the size of the instrument. In fact by means of my invention it is possible to place two chord-groups in the same space that is usually occupied by one chord-group. In order to accomplish this object I arrange the strings for playing the chords or accompaniment in series, and the strings of each series are divided into two groups, the strings of one group being tuned to play one chord and the strings of another group being tuned to play another chord.

The group of strings of any series which comprise one chord are at one end supported in a different plane from the other strings of this series, and on the other hand the strings composing the other group of the series is at the other end of the strings supported in a different plane from the remaining strings. The result is that at one end of the strings of a series the strings of one group are in playing position and at the other end the strings of the other group are in playing position, so that one chord can be sounded by picking the strings which are in playing position at one end, and another chord may be sounded by picking the strings which are in playing position at the other end. Preferably each series of strings will be divided into groups in such a way that one or more of the strings of the series will be in both groups.

My invention is of special advantage where it is desired to make provision for sounding both the major and the minor chords, for with my invention it is possible to arrange any set of strings so that both a major chord and a minor chord may be played thereon, and this may be done without in any way increasing the space occupied by the strings of the chord.

I will first describe one embodiment of my invention and then point out the novel features thereof in the appended claims.

Figure 1 is a plan view of an instrument embodying my invention; Fig. 2 is a longitudinal section through the instrument; Fig. 3 is a section on the line x—x, Fig. 2; Fig. 4 is a section on the line y—y, Fig. 2; Figs. 5, 6 and 7 are diagrams for the purpose of better explaining my invention.

3 designates the sounding board of the instrument, and 4 the strings by means of which the melody is played. These strings are usually placed in a lower plane than the other strings by which the chords are played and pass over a bridge at each end, and at one end are secured to the tuning posts 5 as usual. The bridges over which the strings 4 pass are designated by 6. Situated above the strings 4 are other strings arranged for playing the chords, these strings being shorter than the strings 4 as usual.

In the embodiment of the invention herein illustrated the strings for playing the chords are arranged to play both the major and minor chords, although this particular arrangement is not essential to the invention.

Referring now to the diagram in Fig. 5 it will be seen that the strings which are tuned to play the G major chord are the G, D, G, B and D strings. The G major chord may be converted into a G minor chord by substituting for the B string a B-flat string. In order to provide for playing both the G major and G minor chords therefore from the same series of strings, I include in this series of strings the G, D, G, B-flat, B and D strings. In arranging these strings the strings tuned to give the major chord, or the G, D, G, B, and D strings, are arranged in playing position at one end, while the strings comprising the G minor chord, that is, the G, D, G, B-flat and D strings are arranged in playing position at

the other end. For this purpose, I arrange the bridge at each end with two bridge wires, the bridge wires of one bridge being designated 8 and 9, and those of the other bridge being designated 10 and 11. The bridge wires 9 and 11 are on a higher plane than the bridge wires 8 and 10. The group of strings constituting the G major chord, that is, the G, D, G, B and D strings are passed over the upper bridge wire 11 and are fastened to suitable posts 12, all as usual. All of these strings except the B string 15 are also passed over the upper bridge wire 9 at the other end. The B string 15 is at this end dropped below the other strings see Fig. 3 and extends over the lower bridge wire 8. The B-flat string 14 is fastened at one end to a post 12, and passes over the lower bridge wire 10, see Fig. 4 and thence passes over the higher bridge wire 9 at the other end of the instrument see Fig. 3. The result is that at one end the B-flat string 14 is depressed below the other strings and is carried out of playing position, while at the other end the B string 15 is thus depressed below the other strings and carried out of playing position. If now this series of strings is picked at the right hand end, Fig. 2, the G major chord will be sounded, while if the same series of strings is picked at the left hand end, Fig. 2, the G minor chord will be sounded. The addition of the separate string necessary to convert the major into the minor chord does not take up any room, and the entire series of strings from which these two chord-groups are made occupy only the same amount of room that the strings necessary to play the G major chord would. The diagram in Fig. 5 shows at the left hand the B-flat string depressed and the B string in playing position, and at the right hand end the B string depressed and the B-flat string in playing position. These two arrangements show the relative positions of the strings at the right and the left of Fig. 2.

Another series of strings may be used to play either the C major or the C minor chord, as shown in the diagram Fig. 6. The complete series of strings adapted for this purpose comprise the C, C octave, E, E-flat, G and C strings, and in arranging these strings the C, C octave, E, G and C strings are at the right hand end, Figs. 1 and 2, passed over the upper bridge wire and are thus supported in playing position, while the right hand end of the E-flat string is depressed and passed over the lower bridge wire 10, and at the left hand end the C, C octave, E-flat, G and C strings are passed over the upper bridge wire 9 while the E string is depressed and passed over the lower bridge wire 8. With this construction the C major chord may be sounded by picking the strings at the right Fig. 1, while the C minor chord will be sounded by picking the strings at the left hand end.

The diagram in Fig. 7 shows the arrangement of the strings of the series adapted to play either the F major or the F minor chord. This series comprises the regular strings for playing the F major chord, that is, the F, F octave, C, F, A and C strings with the addition of the A-flat string. At the right hand end Fig. 1 this A-flat string is depressed below the other strings and thus carried out of playing position, while at the other end the A string is carried below playing position, and the A-flat string brought into playing position, thus giving the proper strings for making the F minor chord. In the same way by merely the addition of an extra string, any of the major chords may be changed into a minor chord.

If the strings in Fig. 2 are those for playing the G major, and the G minor chord, the string designated 14 would be the B-flat string while the string designated 15 would be the B string, it being noted that the B-flat string is out of playing position at the right hand end and in playing position at the left hand end, while the B string is in playing position at the right hand end and out of playing position at the left hand end.

My invention is especially adapted for enabling an instrument of this class to be used for giving both the major and minor chords, because the change from a major to a minor chord involves the change of only one string, and therefore by the addition of only one string in each series, two chord-groups may be made from each series of strings.

It will be noted by reference to Figs. 1 and 2 that the bridge at the left of Fig. 1 or at the top of the instrument has three bridge wires, 6, 8 and 9, and that lower bridge wire 6 is used for the melody strings 4, while the other two wires 8 and 9 are used for the chord strings, the wire 8 being used for those strings which are depressed out of playing position and wire 9 being used for the strings that are in playing position. This arrangement is advantageous, as it permits one to arrange the strings compactly and without interfering with each other, and to put in the space usually occupied by the strings of one chord-group, a sufficient number of strings to constitute two chord-groups, and also to place the melody strings directly beneath the chord strings.

Having described my invention, what I claim as new, and desire to secure by Letters Patent is:—

1. In a stringed instrument, a plurality of strings and bridges over which said strings pass, certain of said strings being in playing position at both ends thereof and others of the strings being in playing position at one end only, part of said other strings being in playing position at one end, and part in playing position at the other end.

2. In a stringed instrument, a plurality of strings tuned to sound a chord all of said

strings being in playing position at one end, and all but one of said strings being in playing position at the other end, and an auxiliary string associated with said other strings, said auxiliary string being in playing position at said latter end but out of playing position at the other end.

3. In a stringed instrument, the combination with a plurality of strings tuned to sound a major chord, said strings all being in playing position at one end and all of said strings but that adapted to sound the third of the chord being in playing position at the other end, of a minor-third string in playing position at said latter end but out of playing position at the other end.

4. A stringed instrument having at each end two bridges located in different planes, a group of strings constituting a major-chord, all of said strings passing over the upper bridge at one end and all the strings except the one sounding the third of the chord passing over the upper bridge at the other end, said latter string passing over the lower bridge at said end, and a minor-third string passing over the upper bridge at said latter end and over the lower bridge at the other end.

5. In a stringed instrument, a bridge having three parallel bridge wires located in different planes, a series of melody strings passing over the lower bridge wire, and a plurality of chord strings passing over the other wires, those strings which pass over the upper wire being arranged to constitute a chord.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

CHARLES F. DOUGHTON.

Witnesses:
LOUIS C. SMITH,
MARGARET A. DUNN.