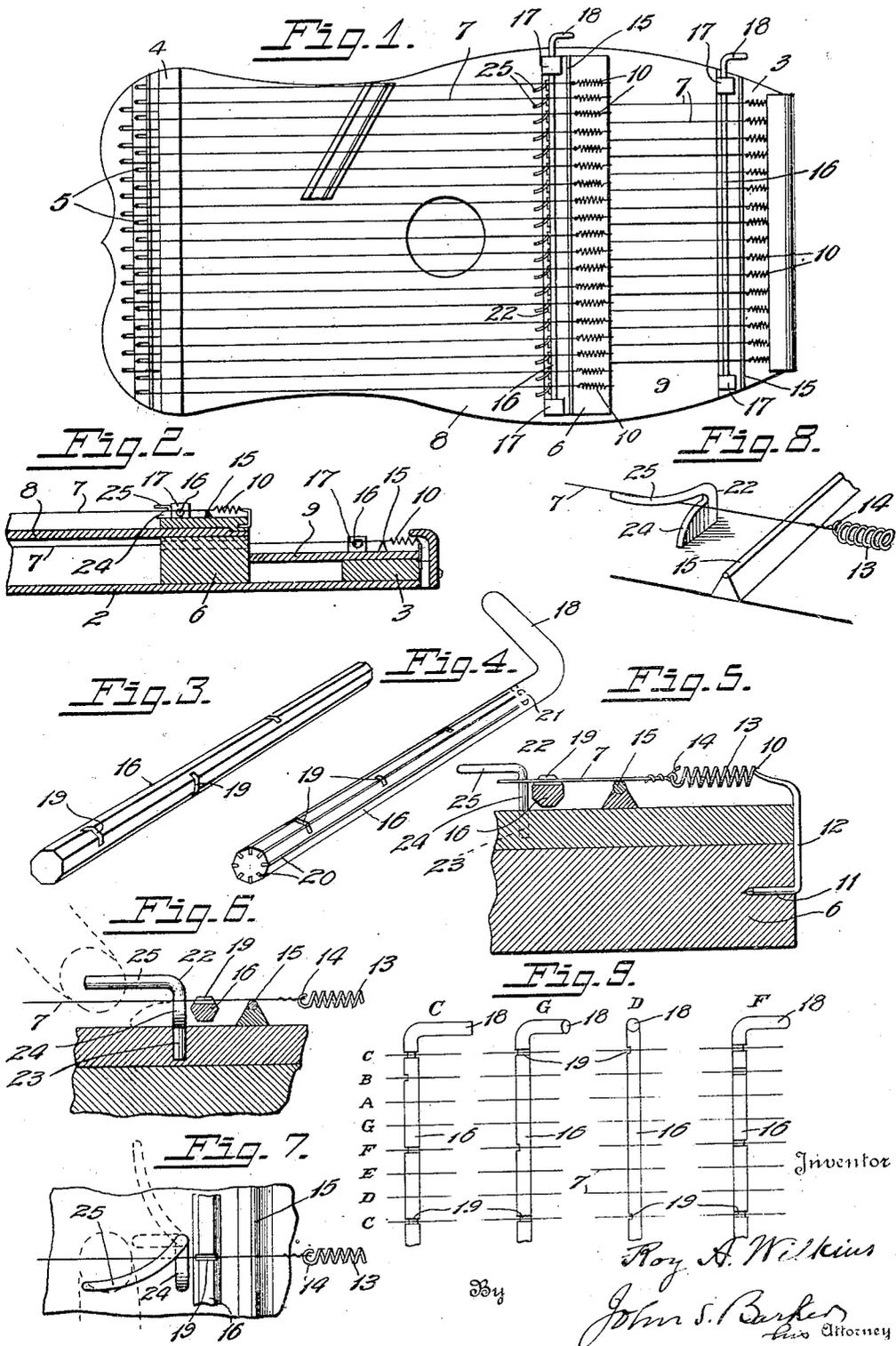


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 STRINGED MUSICAL INSTRUMENT.
 APPLICATION FILED JAN. 17, 1916.

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To all whom it may concern:

Be it known that I, ROY A. WILKINS, a citizen of the United States, residing at Salt Lake City, in the county of Salt Lake and State of Utah, have invented certain new and useful Improvements in Stringed Musical Instruments, of which the following is a specification.

This invention relates to improvements in stringed musical instruments and has been devised with especial reference to application to those of the zither type. It has for its object to provide improved means by which the key of the instrument may be quickly and accurately changed at will, and by which the pitch of any particular string may be changed, and improved means for attaching the strings.

In the accompanying drawings—

Figure 1 is a top plan view of a zither to which my invention is applied;

Fig. 2 is a longitudinal sectional view taken through the tail end of the instrument;

Fig. 3 is a perspective view of a fret bar such as may be employed in connection with an instrument like that shown for changing the key of the instrument;

Fig. 4 is a perspective view of a different form of the fret bar from that shown in Fig. 3;

Fig. 5 is a longitudinal sectional view on an enlarged scale illustrating the several features of the invention.

Fig. 6 is a detail view in longitudinal section also on an enlarged scale and illustrating in side elevation the individual fret pin for a string and the manner in which it is operated;

Fig. 7 is a top plan view of the individual fret pin also illustrating one way in which it may be operated;

Fig. 8 is a detail perspective view illustrating the arrangement of one of the individual frets, without association with the fret bar shown in the other views; and

Fig. 9 is a diagrammatic view illustrating four different positions of a fret bar for adjusting the instrument to play in four different keys.

The frame of the instrument comprises a bottom sounding board 2, a tail block 3, a head block 4 in which the tuning pins 5 are supported, and an intermediate brace or cross-piece 6. The instrument illustrated, which in its general features is similar to

that described in my Patents Nos. 760,288 of May 17, 1904 and 995,310 of June 13, 1911, is provided with two sets of strings 7, one above the other. Between these two sets of strings, and supported by the head block 4 and intermediate cross-piece 6, is an upper sounding board 8, while below the lower set of strings and between the intermediate cross-piece and the tail block is an intermediate sounding board 9.

Each string 7 is secured to an elastic hitch device 10, those for the upper set of strings being supported in the intermediate cross-piece 6, and those for the lower set of strings in the tail block 3. Each hitch device is preferably formed from a single piece of highly elastic and rather heavy wire, and has a stem portion 11 adapted to be securely seated in the frame of the instrument, a standard 12 disposed at about right angles to the stem 11, a spring 13, and a hook 14, to which latter the string is secured. It will be seen by reference to Figs. 2 and 5 that the standards 12 of the hitch devices are of such length as to support the springs 13 above the upper faces of the contiguous parts of the frame of the instrument, so that they are free to act without resting upon or engaging with the frame. The springs are sufficiently strong to put the desired tension upon the strings as the latter are tightened by means of the tuning pins 5. It will be understood that hitching devices with springs of various degrees of strength may be employed for the various strings as the nature of the instrument and the tension to which the particular string with which a hitch device is used is to be subjected. The strings pass over bridges 15 that are located respectively adjacent to the hitch devices 10 and the tuning pins 5.

16 indicates a fret bar extending transversely across the instrument, and arranged to engage with all of the strings of the particular set with which it may be used. The fret bar is supported in bearings 17 in which it may be rotated, and is provided at one or both ends with a handle 18 by which it may be turned in its bearings. The bar is round or polygonal in cross section, being preferably octagonal, and is notched so that when turned to definite positions certain notches come opposite to certain strings, leaving them free from tail bridge to head bridge. The notches are designated 19. The unnotched portions of the bar that are for

the time being opposite particular strings engage with such strings, and the bar is placed at such distance from the contiguous bridge 15 that such engagement or fretting of the strings results in raising their pitch a half tone, as compared with the tone of the string when unfretted or free. The instrument is preferably tuned to the key of C, when the fret bar is in the position with notches 19 opposite the C and F strings of the instrument, as represented by the position C of the bar in Fig. 9, the other strings resting upon the bar and being fretted. To adjust the instrument to the key of G, one sharp, the bar is given a one-eighth turn in one direction, bringing a portion thereof opposite the strings with notches only for the C strings, as indicated by the position G of the bar in Fig. 9. This differs from the position first referred to in that the F string which was before free is now fretted, and hence its pitch raised one half tone. When it is desired that the instrument shall play in the key of D, two sharps, the fret bar is turned one-eighth revolution farther, which brings a face or portion thereof that is not notched at all opposite the strings, as indicated by position D of the bar, Fig. 9, with the result that all the strings, including the C strings, are now fretted.

To adjust the bar so as to play in the key of F, one flat, the bar is turned one-eighth of a revolution from the position first described, that for the key of C, but in the opposite direction from which it was turned in describing the second position, that for the key of G. This brings a portion of the bar opposite the strings with notches for the B, C and F strings, as represented by the position F of the bar, Fig. 9. This position, as compared with the first, or that for the key of C, differs in that the B strings are now left free, whereas before they were fretted, the condition of the other strings remaining unchanged. This release of these strings lowers their pitch a half tone.

With this description it will be apparent to those familiar with the art how the notches in the other portions of the bar should be arranged to produce the desired changes in the pitch of the particular strings in order that the instrument may play in any particular key.

The notches 19 may be cut across the flat faces of the bars, as indicated in Fig. 3, and when the bars are thus formed the strings will rest upon the said flat faces when fretted by the bar. Or the notches may be cut through the ridges between the flat faces of the bar, as indicated in Fig. 4, in which event the strings will engage with the edges of the bar which may have seated in them metal strips or rods 20. The latter form of fret bar I prefer.

The fret bar may be provided with some

designating means, as indicated at 21, to indicate the particular key to which the instrument may be adjusted when the bar is turned to have a particular face or portion thereof opposite the strings.

In order to permit any individual string to be fretted so as to sharp it, I employ the fret pins 22. These are preferably formed of metal and shaped to have a stem 23 seated in a suitable part of the framework of the instrument, such as either the crossbar 6 or the tail block 3; a fret 24 extending laterally from the stem and adapted, by the rotation thereof, to be brought into engagement with the string, and a finger piece 25 by which the fret is manipulated. The stem 23 is seated a little to one side of the string, and the fret 24 is preferably of segmental shape, as represented best in Fig. 8, its base resting upon the surface of the crosspiece 6, or other part of the instrument in which the stem is set, and its upper curved surface being the part that engages with the string, the lower part of the fret bar being under the string and the higher portion coming gradually into engagement therewith, lifting the string until it is properly fretted. The finger piece of the fret pin extends above the string and is preferably curved and disposed, with reference to the fret 24, as represented in Figs. 6 and 7—that is to say, the finger piece normally lies to one side of the string and in position to be engaged by the finger employed to vibrate such string, and thereby drawn toward and over the string. This arrangement has been devised to permit the easy manipulation of the fret pin by the same movement of the hand as that employed in drawing the finger across the string to sound the latter. In Fig. 6 is represented the way in which the fret pin is moved to disengage a string, the thumb of the hand being represented as employed for this purpose. It first engages with the finger piece 25 to move the fret pin, freeing the string which is instantly thereafter engaged, causing the string to be vibrated. In Fig. 7 the first finger of the hand which is about to engage the string, is represented as having first engaged the finger piece 25 and moved the fret pin into position to fret the string and sharp it at the instant before it is touched with the finger for producing the musical tone.

It will be seen by reference to the drawings that in an instrument equipped with the fretting devices such as I have described it is possible to change the key of the instrument as desired, and also to change the pitch of an individual string, even though the notched fretting bar employed to change the key has been adjusted to fret certain of the strings.

What I claim is:

1. A zither or harp having means for

changing the key; said means comprising a rotatable fret bar extending transversely across the strings, and having portions shaped to fret the strings and other portions to disengage the strings, the said parts of the bar,—those for fretting the strings and those for freeing them,—being circumferentially disposed about the bar to selectively fret and free the strings to produce the desired changes in key as the bar is rotated, and individual fret pins for the strings arranged close to the said rotatable fret bar.

2. A zither or harp having means for changing the key; said means comprising a rotatable, notched, fret bar extending transversely across the strings and arranged to have its unnotched portions bear upon the strings so as to raise the pitch of the engaged strings a half tone, the notches being arranged so that when brought opposite the strings the latter are freed from engage-

ment by the fret bar, and being circumferentially arranged about the bar to selectively free the strings to produce the desired changes in key as the bar is turned, and individual fret pins for the strings arranged close to the rotatable fret bar and adapted to be easily operated at will by the player of the instrument.

3. A stringed musical instrument having a fret pin for an individual string, comprising a stem seated in the framework of the instrument, and adapted to turn in its seat, a fret of segmental shape carried by the stem, with a curved upper edge adapted to pass under and lift the string to fret it, and having a straight lower edge engaging with the framework in which the said stem is seated, and means by which the fret pin is manipulated.

ROY A. WILKINS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."