

**No. 614,755.**

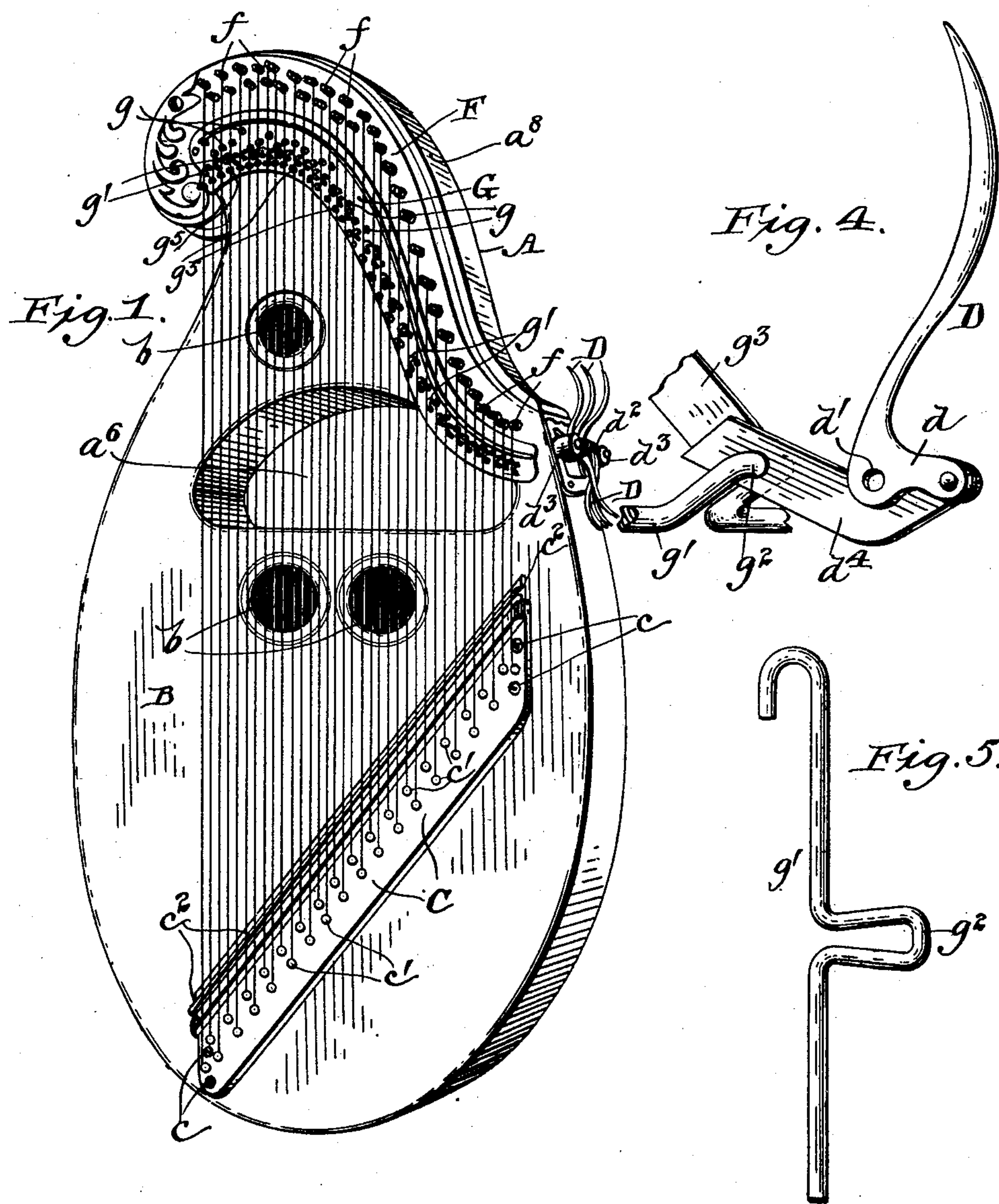
**Patented Nov. 22, 1898.**

**O. PEDERSEN.**  
**MUSICAL INSTRUMENT.**

(Application filed July 12, 1897. Renewed Oct. 31, 1898.)

(No Model.)

**2 Sheets—Sheet 1.**



**WITNESSES**

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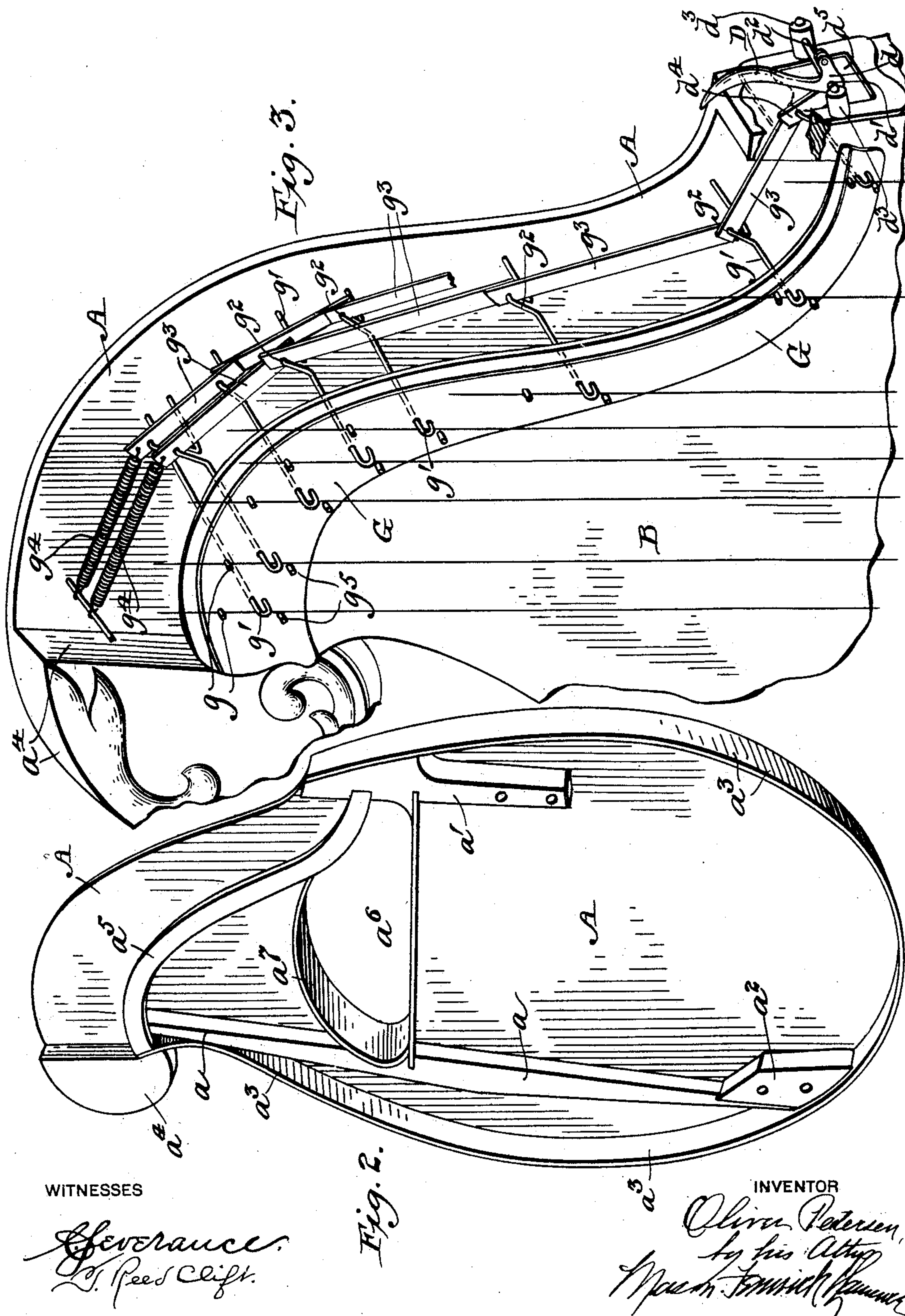
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# UNITED STATES PATENT OFFICE.

OLIVER PEDERSEN, OF NASHUA, NEW HAMPSHIRE.

## MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 614,755, dated November 22, 1898.

Application filed July 12, 1897. Renewed October 31, 1898. Serial No. 695,099. (No model.)

*To all whom it may concern:*

Be it known that I, OLIVER PEDERSEN, a citizen of the United States, residing at Nashua, in the county of Hillsborough and State of New Hampshire, have invented certain new and useful Improvements in Musical Instruments; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in musical instruments, and more particularly to that class of musical instruments in which sounding-boards are employed and free strings adapted to be played upon by the hand. The instrument which I have devised I term the "zimboleen."

It consists in a musical instrument having a sounding-board and free playing-strings strung across the surface of the said board and means for changing the key of the said strings as desired, the mechanism holding the said strings in the desired key automatically.

It further consists in certain other novel constructions, combinations, and arrangements of parts, as will be hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 represents a perspective view of my improved musical instrument. Fig. 2 represents a perspective view of the base-framework upon which the sounding-board, strings, and keys are mounted. Fig. 3 represents a detail perspective view showing the manner of connecting the hand-levers with the devices for changing the key of the strings. Fig. 4 represents an enlarged detail view of one of the hand-levers and the link connecting the same with the key-changing mechanism, and Fig. 5 represents an enlarged detail view of one of the movable pegs used for regulating the strings of the instrument.

A in the drawings represents a base or back for a musical instrument constructed in accordance with my invention. B represents a sounding-board. C represents a string-base adapted to be secured across the front of the instrument, and D represents hand-levers for regulating the key of the strings.

Upon the back A of my improved musical instrument are secured bracing-bars of the

framework. Of these the bar *a* extends longitudinally of the said instrument and is not made of sufficient thickness to touch the sounding-board. The pieces *a' a²* are also secured to the base A. Secured to the pieces *a a' a²* and on the back A is an inclosing rim *a³*, which extends almost the entire distance around the instrument. A spacing-block *a⁴* is also secured at the upper end of the instrument. A connecting supporting-piece *a⁵* for further bracing the device and assisting to support the peg-holding plate connects the pieces *a'* and *a⁴*. A central opening is formed in the base A, as at *a⁶*, and this is surrounded by a rim *a⁷* of the same height as the rim *a³*.

The sounding-board B fits upon the rim *a³*, covering the bars *a*, *a'*, and *a²* of the framework and is provided with an aperture corresponding to the aperture *a⁶* in the base A, so that an opening is formed in the instrument, extending from front to rear, which affords access to the strings from both sides of the instrument. Suitable apertures, as *b b*, may be formed in the sounding-board to permit a greater volume of sound to escape from the instrument and to permit also of the proper vibration of the said board. The sounding-board only touches the spacing-pieces *a' a²* and the rims *a³ a⁷*, but does not touch the bar *a*. This leaves the sounding-board B free, for the most part, to vibrate, as is desirable in such an instrument.

The string-base C is secured upon the outer face of the sounding-board, as seen in Fig. 1 of the drawings, screws being passed through the ends thereof, as at *c c*, the said screws passing through the sounding-board and into the spacing-pieces *a' a²*. In this manner the string-base may be securely fastened in place. The strings are secured at one end to the string-base C in any suitable manner, but preferably by passing them through holes in the string-base, pegs *c'* being used to secure them firmly therein. The strings then pass upward over a bearing-bar, as *c²*, to the pegs at the upper end of the instrument. The pegs *f f* have bearings in the woodwork below a plate F, fastened to the instrument upon its outer face along its upper edge. The pegs *f f* have the upper ends of the strings secured to them and are adapted to be turned in their bearings in the woodwork, so as to



wind up the strings in order to tighten them. In this manner the strings may be tuned in a way similar to that in which piano-strings are tuned, the pegs  $f$  being preferably provided with squared ends, by which they may be tuned. In addition to the pegs  $f$ , the wires rest against other pegs, as  $g$ , secured in a plate G. The plate G is also secured on the front face of the instrument just below the plate F and borders the upper edge of the sounding-board B.

In order to change the key of the strings after they have been properly tightened by means of the pegs  $f$ , I provide movable pegs, as  $g'$ , which have bearings at one of their ends in the plate G and at their other ends in the base A. These movable keys  $g'$  are preferably provided on their projecting ends with bent-over portions, forming short loops, the free ends of said loops being adapted to be swung against the strings of the instrument. In order to rotate the movable pegs  $g'$ , each one is provided with crank portions, as  $g^2$ . By connecting certain ones of the movable pins  $g'$  together, so as to move them simultaneously, the key of the strings of the instrument may be changed when desired and different combinations of chords may be made by connecting different sets of keys with different operating means. The movable pegs  $g'$ , composing the different sets to be operated upon, are connected by means of links  $g^3$ , the said links engaging the crank portions  $g^2$ , whereby the proper leverage is obtained for positively moving each one of the movable pegs. In order that each set of pegs thus connected may be moved at will, hand operating-levers D are pivoted exteriorly of the casing. These levers D are preferably provided with angular end portions, as  $d$ , and are pivoted, as at  $d'$ , upon a cross-rod  $d^2$ , mounted between standards  $d^3$ , formed on the rim of the instrument. Each lever is connected to one of the movable pins of each series or set of movable pins by means of a link  $d^4$ . Each link  $d^4$  is preferably angular in shape, so that when a series of links  $g^3$  are drawn toward the hand-levers D by moving the same on its pivot the pivotal points at the ends of the link  $d^4$  will be brought in line with the pivotal point  $d'$  of the lever D, and in this way the lever will be locked in that position until moved by hand. A suitable aperture, as  $d^5$ , is made in the rim  $a^3$  for the links  $d^4$  to extend through. In order to retract the links  $g^3$  when they are released from the pull of the levers D, springs  $g^4$  are secured to the ends of the inner links  $g^3$ , and thus exert a constant pull upon each series of the said links and normally tend to hold the movable pins out of engagement with the strings of the instrument. The strings of the instrument normally rest against the pegs or pins  $g$ ; but when it is desired to change the key of the instrument the strings which will effect the same are moved away from the said pegs by the movable pins  $g'$

of the proper series, the said pins being swung by means of the proper hand-lever D. Where gut strings are used, it will be sufficient to allow the strings merely to rest against the movable pins; but where wire strings are used it is found advantageous and best to cause the movement of the movable pins to force the wires against a second series of pins  $g^5$ , also mounted upon the plate G. The portion of the instrument which is occupied by the movable pegs  $g'$  is closed by a rim portion, as  $a^8$ .

In using the zimboleen the instrument may be set upon the lap of the performer and the right hand may play upon the strings upon the front of the instrument, while the aperture  $a^6$  permits the left hand to be passed through the instrument to reach the strings from the rear side. In this way the strings may be played upon by the fingers. When it is desired to change the key of the instrument, one or more of the levers D may be operated to change the tune of different series of strings, as hereinbefore described.

In an instrument like that shown in the drawings there are preferably seven levers D used, which are connected with all the strings arranged in different series. An instrument constructed in this way makes a very desirable instrument for accompaniment with a mandolin or guitar, and yet it may also be very effective as a solo instrument. It is also susceptible of being constructed in a very beautiful design, so as to produce a handsome attractive instrument. The parts are also very simple in construction and not liable to get out of order easily.

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

1. In a musical instrument, the combination with a casing, of a sounding-board mounted upon the same, a series of strings secured across the face thereof, a series of movable pegs mounted in the casing to one side of the strings and having their outer ends bent over to form hook extensions, and means for rotating the said pegs whereby the hook extensions are adapted to be forced against the strings to change the tones thereof, substantially as described.

2. In a musical instrument, the combination with a casing and sounding-board, of strings mounted upon the same, a series of movable pegs having crank portions formed thereon, their outer ends being provided with bent-over portions forming hook extensions for engaging the strings, a series of links connecting certain of the pins, levers connected to the links at one end for pulling them in one direction, and springs at the other ends of said links for pulling them in the other direction, substantially as described.

3. In a musical instrument, the combination with a casing and sounding-board, of strings mounted upon the same, movable pins having cranks formed upon them, the said



pins being adapted to engage strings for changing their tones, links connecting series of the pins, a shaft mounted upon the casing and a series of levers having angular end portions, connected with the said links for actuating them, the said angular end portions being so pivoted upon the shaft as to remain in either position to which they are moved, substantially as described.

10 4. In a musical instrument, the combination with a casing of a sounding-board passing across the same, movable pins for changing the key of the said strings, said pins having crank portions, hand-levers having angular end portions connected with the said crank portions, the said angular end portions being so pivoted that they will automatically remain in either position in which they are placed, substantially as described.

20 5. A musical instrument consisting of a suitable casing, a sounding-board, strings mounted upon the same, fixed pegs upon the said casing, movable pegs having free swinging ends, means for rotating said movable  
25 pegs whereby they are adapted to force the strings against the said fixed pegs and hold them there, substantially as described.

6. A musical instrument consisting of a suitable casing, a sounding-board, strings mounted upon the same, a double series of fixed pegs upon the said casing, movable  
30 pegs having free swinging ends, means for rotating said movable pegs whereby the strings may be forced from engagement with one series of fixed pegs into engagement and  
35 against the other series of fixed pegs for changing the key of the strings, substantially as described.

7. A musical instrument consisting of a suitable casing, a sounding-board, strings  
40 mounted upon pegs on the same, auxiliary fixed pegs also mounted upon the said casing which are normally out of engagement with the said strings, movable pegs mounted in the said casing, means for rotating the same  
45 whereby they are adapted to force the strings against the said auxiliary fixed pegs for changing the key, substantially as described.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

OLIVER PEDERSEN.

Witnesses:

R. T. SMITH,

E. B. GOULD.