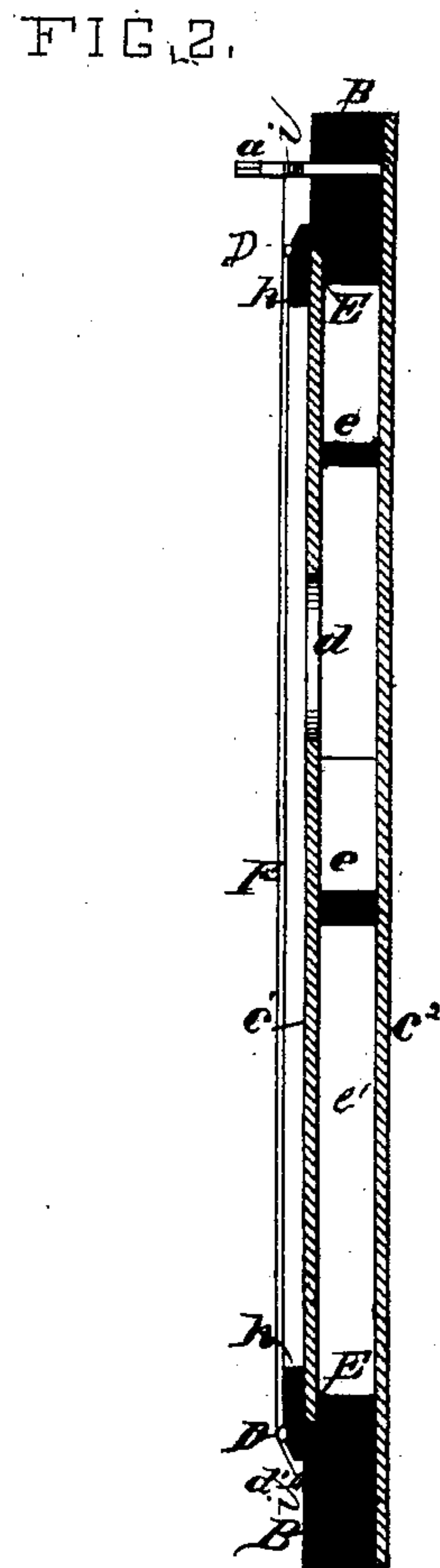
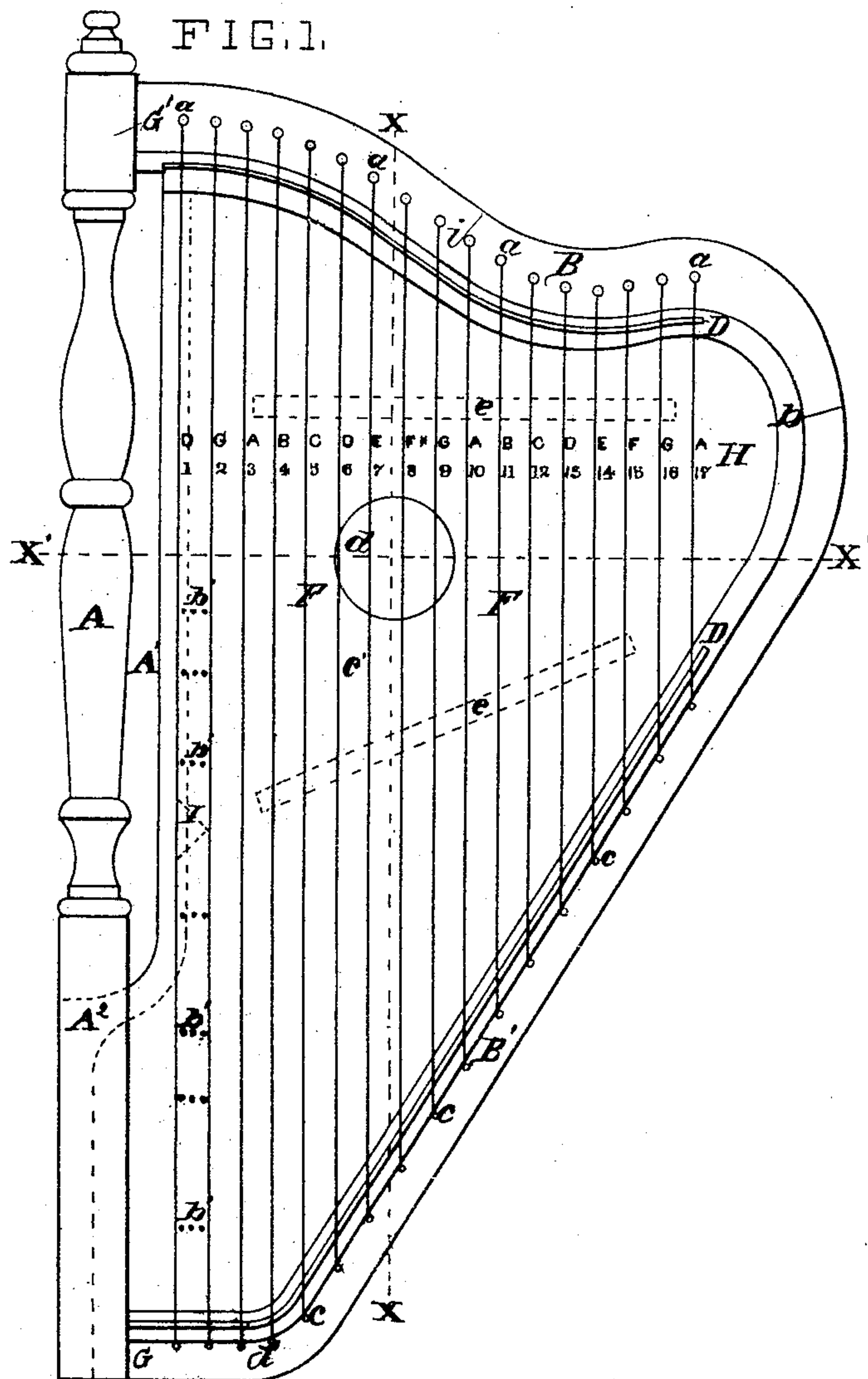


C. KUNKEL.
Lyre.

No. 222,138.

Patented Dec. 2, 1879.



ATTEST.
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UNITED STATES PATENT OFFICE.

CHARLES KUNKEL, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN LYRES.

Specification forming part of Letters Patent No. **222,138**, dated December 2, 1879; application filed January 29, 1879.

To all whom it may concern:

Be it known that I, CHARLES KUNKEL, of the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in the Lyre—a musical instrument; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My object in this invention is to improve upon the ancient lyre—a stringed instrument of music—first, as regards its form and construction, thereby obtaining a continuous string-bridge; second, by the overlapping of portions of the continuous bridge, as above, to form upon a sounding-board lips upon which to place the pillow-wires, and thereby gain full sonority from the unbroken communication existing between the strings and the said sounding-box as to vibratory transmission of sounds; third, to lessen the difficulties attending the tuning of such an instrument, by providing a basis for correcting, modifying, and forming the tones of the first octave from the second string, G, thereby establishing the temperament of the instrument; fourth, to relieve the sounding-box of the strain and tendency to warp caused by the tension of the strings, by interposing a centered post as an effective auxiliary supporter, the entire frame to have but six pieces of wood.

My invention essentially consists in the formation of a harp-shaped frame, which is principally composed of three pieces—to wit, the key and anchor pieces, which, when framed, form a continuous bridge, and the said supporting-post. Unlike a harp, my instrument has a sounding-box. Along the inside edge of said key and anchor pieces, to prepare a rest for the said sounding-board, there is sunk a groove, into which the ends of the said sounding-board are inserted and firmly secured. The said pieces of the frame are accurately arch-jointed together and with the post A, which is accurately placed, so as to have its vertical center to coincide with the string-strain of the instrument when tuned. When the said sounding-board is in the grooves, enough of said key and anchor pieces overlap

the sounding-board to form an excellent continuous bridge and resonator, over which the strings are stretched, and into the receding parts of which the pegs and tuning-keys are inserted. The back board of the said sounding-box extends entirely over the two closed sides of the triangular figure which the said frame forms. Shoulders are cut on the two free ends of the said frame, to form a counter-shouldered seat for the post A, and the narrow strip A' is cut off from the cover *c'* and the piece of wood E, which form the third side of the sounding-box *e'*. This cut-away serves to prevent any deadening of the tone emitted from the said sounding-box through contact and the stiffness of the said post A. This neatly-turned post is at both ends lap-shouldered by gaining, and caused to fit and rest on the counter-shoulder G G' of the said bridge ends, composed of the anchor and key pieces. It rests, also, for several inches, on the top of the said sounding-board, as shown by dotted lines A², to which it is firmly glued. The said post performs an important function, it being nearly the sole supporter of the strain upon the bridge-pieces B B' when the strings F are in tension, the sounding-box not having capacity therefor. It also forms a rest for the arm of the performer.

In the top of the sounding-board *c'* is an opening for the emission of sound from the box. Into the anchor-piece B', which with the semi bridge-piece B has the arch key-joint *b*, the pegs for the strings are inserted in the bench formed in the rear of the lower bridge. In like manner the tuning-pins *a* are held on a similar bench on the upper one. Over both halves of said bridge the pillow-wires D are laid, to prevent the in-cutting of the strained wires.

The overlapping, above the groove E, of a lip from the bridge-pieces B B' is very effective in communicating perfectly to the sounding-board the vibratory waves from the strings over the bridge, on account, mainly, of its continuity. Since the fullness and clearness of the tone of the instrument depend upon the homogeneity or solidity in the bond between the bridge and the sounding-board, the connection together of these parts requires to be very perfect.

To aid in the tuning of the strings I have

introduced a very effective mechanical device. Between the first string, D, and second string, G, are arranged the frets b' , which range from 2 to 8 on the diatonic scale H.

When the desired tone of the second string, G, is established by means of the pitch-fork, or in any other manner, if, then, the wedge-shaped block I, which is deeper through than the space between the lines, be placed between the first string, D, and second string, G, with the broad side against the first string, D, and its points upon the lower b' , the tone of said second string, G, is the pitch for the next string above, the third string, A.

The removal of the wedge successively on each fret to upper b' , and corresponding tuning, gives the correct pitch to the first eight strings, and this establishes the temperament of the instrument, to which the remaining strings are now tuned in octaves. The said scale H herein manifests its value to learners and other performers.

The leading essential elements constituting my invention are the continuous bridge, which forms two sides of the instrument, the overlapping continuous lip h upon the sounding-board e' , the arrangement of the post A to relieve the sounding-box of the strain of the strings, the groove E, to accomplish the vibratory transmission of sound as set forth, and, lastly, the arrangement of parts for adjusting correctly from once-established tone-data the subsequent seven tones by means of the wedge-block and tuning-key.

In the accompanying drawings, in which similar letters indicate corresponding parts, Figure 1 is a face view of the instrument. Fig. 2 is a section from X to X, showing the sounding-board as supported by the props e , the solid pieces which constitute two sides, the key and the peg-benches, and the bridge of the instrument. Figure 3 is a cross-section of the same from X' to X', and shows the coincidence of the plane of the strings with the center of the said supporter-post.

On the general face-plan, Fig. 1, A is the supporter-post, and is slightly over one-third gain-lapped at the joints G and G' into corresponding gains in the ends of the bridge-pieces B B'. The post-lap shown at A² rests as well upon the sounding-board and the piece E', which forms the third side, and which is partly cut out to form the open space A'. In the bench d' in said bridge-pieces B B' are inserted the anchor-pegs c and the tuning-pins a .

b is the key-joint in the arch formed by the junction of the said pieces B B'.

b' are frets upon the said sounding-board, which are to indicate a position wherefrom, when the wedge-block I is placed thereon, and pressing the second string, which is G-major, all the strings from number 3 to number 9, one octave, can be accurately tuned.

c are the anchor-pegs to the seventeen strings F, which, when stretched over the upper and lower pillow-wires, D, on the said bridge, are

then to be attached to the tuning-pins a , and the proper tension imparted by turning the said pins with a key.

e' is the sounding-board, and d the sound-hole therein.

e^2 is the back of the said sounding-box e' .

e indicate the position of the supporting-props in the interior of the said sounding-box.

F are the seventeen strings required to compass the said scale H.

E is the groove, which passes around inside of the said solid frame-pieces, into which the sounding-board is inserted and secured, while the lip h is caused to extend inward over the same to produce the resonance set forth.

On the top of the said sounding-board I place the diatonic scale of eight sounds with seven intervals, of which two are half-tones and five are whole tones; also, the numbers of the same serving to express the letter and number of each wire.

The scale of this dimension is G-major, which is the key best adapted to the generality of voices, and best conforms thereto as an accompaniment. To best suit this instrument, the peculiar scale of these notes is represented by commencing with the dominant and leaving out E and F \sharp , and proceeding from G upward.

Having thus described my invention, what I claim is—

1. In the musical instrument herein described, the string-bridge consisting of the key and anchor pieces B B', grooved to receive the ends of the sound-board e' , and having the overlapping-lip h , the slopes and benches, and the pillow-wires D, all arranged as described, and for the purpose set forth.

2. The key and anchor pieces B B', formed with the key and peg-bench, and having the laps G G' to receive the counter-lap of the post A, constructed and arranged as described, whereby the longitudinal axis of the post is coincident with the plane of the strings of the instrument, substantially as set forth.

3. In a lyre, having a sounding-box, the lip h , extending from the string-bridge and overlapping the sound-board, substantially as described, and for the purpose set forth.

4. A lyre, having upon its sounding-board the frets b' and diatonic scale H, in connection with the wedge-block I, substantially as and for the purpose set forth.

5. The improved lyre, consisting of the post A, the bridge B B', with groove E, lip h , pillow-wire D, and bench i , the sound-box e' with frets b' and diatonic scale H, all combined and arranged as described, and for the purpose set forth.

In testimony that I claim the foregoing as my own invention I affix my signature in presence of two witnesses.

CHARLES KUNKEL.

Witnesses:

PAUL WITTENBERG,
W. THOMSON.