

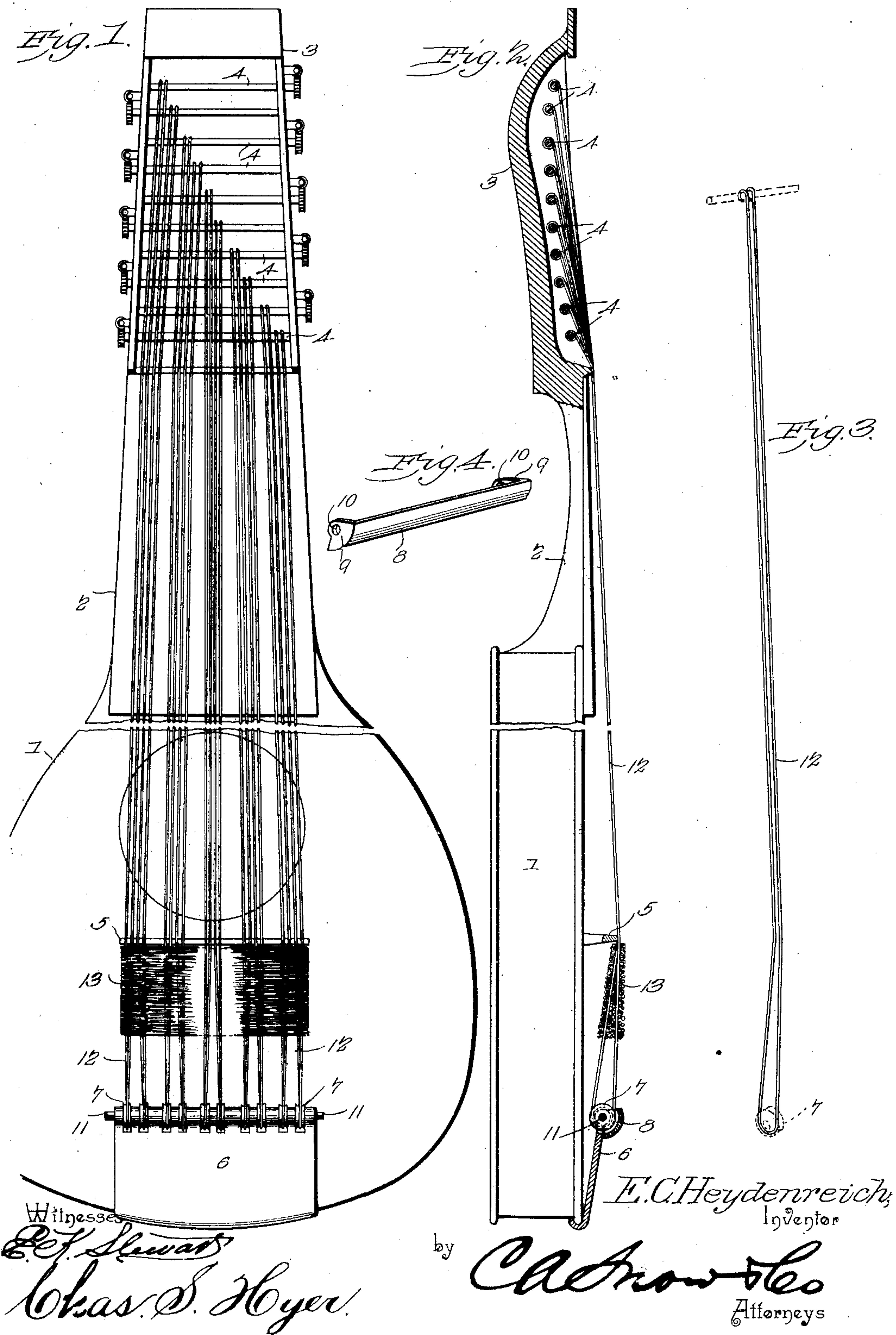
No. 687,984.

Patented Dec. 3, 1901.

E. C. HEYDENREICH.  
MUSICAL INSTRUMENT.

(Application filed July 15, 1901.)

(No Model.)





# UNITED STATES PATENT OFFICE.

ERNST C. HEYDENREICH, OF MOUNT CLEMENS, MICHIGAN.

## MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 687,984, dated December 3, 1901.

Application filed July 15, 1901. Serial No. 68,373. (No model.)

*To all whom it may concern:*

Be it known that I, ERNST C. HEYDENREICH, a citizen of the United States, residing at Mount Clemens, in the county of Macomb and State of Michigan, have invented a new and useful Musical Instrument, of which the following is a specification.

This invention relates to musical instruments, and particularly to that class having strings coacting with a sound-body provided with a neck and wherein a number of strings are closely arranged and toned to the same pitch or in unison; and the purpose of the same is to arrange the strings in doubled form, so that two strings will be controlled in tuning by a single key to more readily and uniformly obtain an accurate unison by simultaneously exerting the same tension on the dual strings.

The invention consists in the construction and arrangement of the several parts, which will be more fully hereinafter described and claimed.

In the drawings, Figure 1 is a face view of a musical instrument embodying the features of the invention. Fig. 2 is a longitudinal vertical section of the same partially broken through. Fig. 3 is a diagrammatic view showing the dual string controlled by a single tuning-key. Fig. 4 is a detail perspective view of a cap to fit over a portion of the tailpiece.

Similar numerals of reference are employed to indicate corresponding parts in the several views.

The numeral 1 designates a sound-body having a neck 2 with a key-head 3, and in the present instance ten keys 4 are rotatably mounted in said head and project laterally for ease in engaging the same. The instrument shown also has a bridge 5 and a tailpiece 6. The form of instrument shown is of the lute type having twenty strings; but it will be understood that it is intended to utilize the invention in its several phases in connection with any stringed instrument to which it may be applicable. At the inner end of the tailpiece ten sheaves or pulleys 7 are mounted to freely rotate and are arranged in distinctly-spaced sets of two, so as to carry four strings of a similar tone across the bridge in close relation and space the sets of strings of different tones, as usual. A cap 8 of elongated

form is removably fitted over the pulleys or sheaves to cover the same to prevent contact of extraneous objects therewith, the ends 9 of the said cap having apertures 10 to engage the projecting ends 11 of the pintle for the said sheaves or pulleys. Over each sheave or pulley a doubled string 12 is passed and continued upwardly in contact with the bridge 5 and over the neck 2 to one of the keys or pegs 4, both ends of the said string being secured to the single key or peg. Each string used in the instrument is similarly arranged, and where the strings cross the bridge they are disposed at proper intervals, as in ordinary stringing, and likewise over the neck, so as to be pressed into operative contact with the frets of said neck. It will be observed that each doubled string engages a movable resistance, so that both strands thereof will have an equal tension simultaneously exerted thereon when the key or peg coacting therewith is turned to tighten or tune the same. By this means the strands of the dual strings will be accurately brought up to the same pitch and both will remain so for a greater length of time, and if let down or the tone thereof lowered by the action of the surrounding atmosphere or temperature conditions or if manually slackened by the key or peg the same tone will be maintained in each strand at a lower pitch. Thus the strings of each set having the same tone or in unison can be quickly tuned as desired, and in an instrument having a plurality of strings, as in the present instance, the mode of stringing and tuning will be found exceptionally convenient and accurate. In instruments of this class it is usually required to tune each string of each set of strings individually, and frequently considerable time is consumed in arriving at this result, and the strings will lower unequally. The present invention is obviously advantageous in view of this old method and the strings will last longer, because they are not continually subjected to unequal tensions in tuning the same.

The rates of vibration of both portions of the string when arranged, as set forth, in accordance with the invention are alike, and both portions cooperate to produce one tone of a given pitch and of considerably-increased strength and more beautiful than could oth-



erwise be obtained were the ordinary method of stringing employed.

When the instrument is evenly strung and it is required to suppress the falsetto dissonance and increase the carrying power and to avoid a shaky, tremulous, and more or less rasping quality to the original tones and impairing the purity of the latter, a wool strand 13 is transversely interlaced through the short lengths of the strings between the bridge and tailpiece, and as said strand 13 is of a non-resonant and non-vibratory character a reliable damper or suppressing means for the purpose set forth will be provided without injury to the strings and readily placeable in operative position.

The invention as an entirety will be conducive to producing a superior instrument, both in wearing qualities and in tone, and it will be understood that the number of strings arranged as set forth may be increased or decreased at will.

Having thus described the invention, what is claimed as new is—

1. The combination with a musical instrument comprising a sound-body, a neck providing a finger-board, a bridge and tailpiece, of doubled strings having their continuous extremities running through the tailpiece and both members of each string carried upwardly over the bridge and also over the finger-board of the neck, and a plurality of keys carried

by the neck, each of the keys having the two ends of each doubled string engaging the same, whereby the parts of each doubled string may be simultaneously tuned to the same pitch or in unison and be fingered and played by the operator to increase the volume of tone.

2. The combination with a musical instrument comprising a sound-body, a neck providing a finger-board, a bridge and tailpiece, of a plurality of doubled strings arranged in distinct sets, the strings of each set being all tuned in unison, the strings of all the sets having their continuous extremities running through the tailpiece and both members of each string of all the sets carried upwardly over the bridge and also over the finger-board of the neck, and a plurality of keys carried by the neck, each having the two ends of each doubled string engaging the same, whereby the parts of each doubled string may be simultaneously tuned to the same pitch or in unison and be fingered and played by the operator to increase the tone-volume of the sets of strings.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ERNST C. HEYDENREICH.

Witnesses:

TRAUGOTT LUNGERSHAUSEN,  
O. C. LUNGERSHAUSEN.