(No Model.)

# C. C. HUDSON.

## METHOD OF IMPROVING THE TONE OF VIOLINS.

No. 389,813. Patented Sept. 18, 1888.

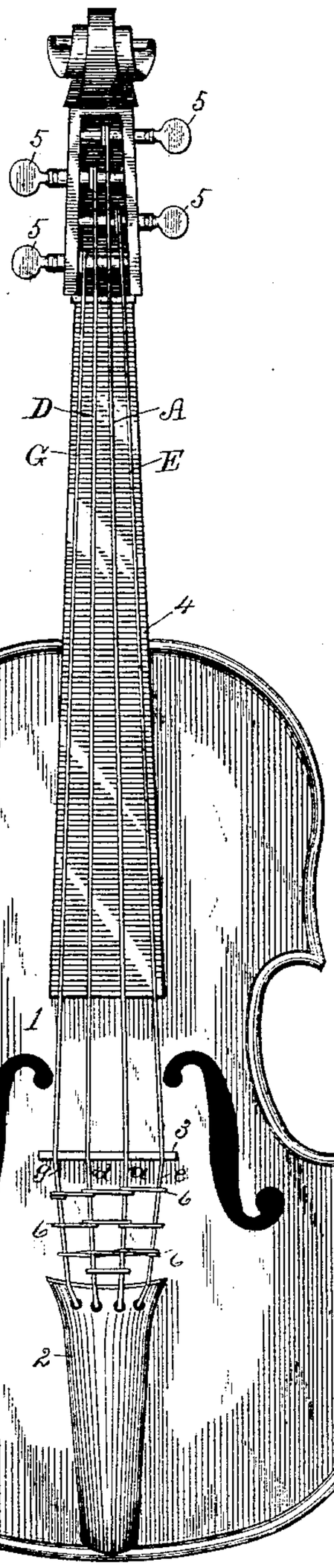


Fig. 1.

Fig. 2.

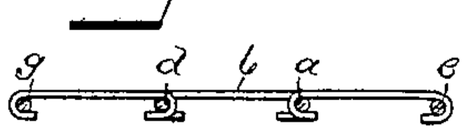


Fig. 3.

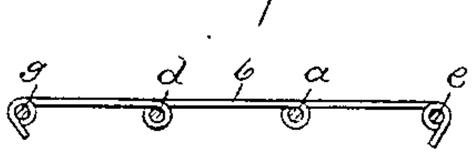


Fig. 4.


Fig. 5.


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# UNITED STATES PATENT OFFICE.

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## METHOD OF IMPROVING THE TONE OF VIOLINS.

SPECIFICATION forming part of Letters Patent No. 389,813, dated September 18, 1888.

Application filed June 2, 1888. Serial No. 275,824. (No model.)

*To all whom it may concern:*

Be it known that I, C. COLUMBUS HUDSON, a citizen of the United States, residing at Elmira, in the county of Chemung and State of New York, have invented certain new and useful Improvements in the Method of Improving the Tone of Violins; 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 has for its object to devise a method of increasing the purity of the tones of violins, violas, violoncellos, and double bass viols, and at the same time increasing the carrying power of the tones produced, by suppressing the falsetto dissonance and transmitting the vibration of the portion of the strings between the bridge and the tail-piece to the bridge itself. It will of course be understood that the tones are produced in this class of instruments by putting the strings into vibration by the frictional contact of a hair bow, and, furthermore, that this class of instruments is so exquisitely sensitive as to be affected by the slightest changes of any kind whatever. For convenience, I designate the strings by their usual letters, E, A, D, and G, and the portion of the strings between the tail-piece and the bridge by *e*, *a*, *d*, and *g*. The portion of the string denoted by *e*, *a*, *d*, and *g*, being very short, vibrates with intense rapidity, producing a falsetto humming sound of a very high register, not in sympathy with but out of tune with the original tones produced by the bow. This dissonant humming falsetto tone imparts a shaky, tremulous, and more or less rasping quality to the original tones, thereby materially impairing their purity. This serious defect in this class of instruments, when considered from the standard of perfection, has heretofore been overlooked to a great extent for want of a standard of comparison. This standard of comparison is furnished by the adoption of my novel method, and its value becomes apparent the moment it is tested.

In the accompanying drawings, forming part of this specification, Figure 1 is an elevation of a violin, showing the manner in which my invention is applied; and Figs. 2, 3, 4, and 5 are details views showing different modes in which it is carried into effect.

1 denotes the table of a violin or other instrument of this class; 2, the tail-piece; 3, the bridge; E A D G, the strings; 4, the finger-board, and 5 the keys. These parts are all of ordinary construction. The portion of the strings between the bridge and the tail-piece I have denoted, as already stated, by *e a d g*.

My invention consists, generically, in connecting the portions of the strings between the bridge and tail-piece by means of wires, cords, or narrow strips of metal, which I designate as 6. It is necessary that slight tension should be placed upon the connections—that is, they should be drawn sufficiently taut to take up and transmit the vibrations of this portion of the strings.

In Fig. 1 I have illustrated the application of various forms in which my invention may be carried out. It will of course be understood, however, that only one form requires to be used, the special form depending upon the special requirements of the instrument and the judgment of the performer.

In Fig. 5 I have illustrated a single connection for two strings in the form of a wire or narrow strip of metal provided with a hook at each end adapted to engage two strings, and in Figs. 1 and 2 I have shown the manner of the application to the four strings of the instrument.

In Fig. 3 the invention is carried out by means of a continuous wire or strip of metal, which is first coiled, for instance, about the E string to secure the end, then is extended to the A-string and coiled about that, then to the D-string and coiled about that, and finally to the G-string and coiled about that tightly enough so that the end will not slip, it being of course understood that the strip is drawn taut in coiling it about the strings.

In Fig. 4 I have shown my invention as carried out by means of a cord which is passed over and under alternate strings, around the last string, and backward over the strings under which it has previously passed, the ends of the cord being tied substantially as shown.

When an instrument is evenly strung and it is required to suppress the falsetto dissonance and increase the carrying power, the

strings are all connected as in Figs. 2, 3, and 4. Where an instrument is unevenly strung, the scale may be equalized by connecting any two of the strings. Suppose, for instance, that the D and A strings are less clear and resonant without the improvement than the E and G strings. The D and A strings simply require to be connected in the manner indicated in Fig. 5 and next to the tail-piece in Fig. 1.

When the tone of a violin is naturally "mute" or "tubby," by placing a hard metallic connection upon the strings between the bridge and the tail-piece, a ringing quality will be imparted to the tone. On the other hand, when the instrument is harsh and rasping in tone, the use of a soft metallic connection or a cord will have a mellowing effect upon the naturally coarse tone of the instrument. In practice very fine copper, brass, or steel wires will be found to give the best results. I have found that copper wire will impart a rich resonant quality of tone, that a brass wire will impart a still more brilliant and bell-like tone, and that a steel or iron wire will give a more brilliant tone than copper, but less brilliant than brass.

The operation of my invention in use is as follows: When a note is taken on either string, the dissonant falsetto tone which would otherwise be produced by the portion of the string between the bridge and tail-piece is completely suppressed, leaving the original tone pure and bell-like and its carrying power unimpaired by unsympathetic tones produced by the vibration of the string between the bridge and tail-piece. Furthermore, the vibration of this portion of the string, which would otherwise have produced a falsetto dissonance, is now conveyed to the next string, or to the remaining strings if all are connected, by means of the cord or wire, and by them is transmitted to the bridge, thus increasing the vibration of the bridge, and consequently the vibration of the instrument itself. No matter how slight may be the falsetto dissonance produced in instruments of this class, it necessarily impairs to a greater or less extent the purity and carrying power of the tones produced.

My invention acts to suppress whatever dissonance there may be, and no matter how slight may be the additional vibration transmitted to the bridge and to the instrument this additional vibration all tends to increase the purity and carrying power of the original tones of the instrument, making them more brilliant and bell-like.

The advantages of my invention will be especially noted by the ease with which double stops may be accomplished, there being no dissonant tones to confuse the ear of the performer.

Having thus described my invention, I claim—

The method of increasing the purity and carrying power of the original tones of violins and similar instruments, which consists in placing a connection under slight tension between two or more of the strings between the bridge and the tail-piece, whereby dissonant falsetto tones are suppressed and the vibrations of this portion of the strings transmitted to the bridge, substantially as described.

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

C. COLUMBUS HUDSON.

Witnesses:

A. M. WOOSTER,

BERTHA E. LEE.