No. 622,021. Patented Mar. 28, 1899.

R. & E. SAMPLE.

VIOLIN.

(Application filed Aug. 31, 1897.)

(No Model.)

Fig. 1.

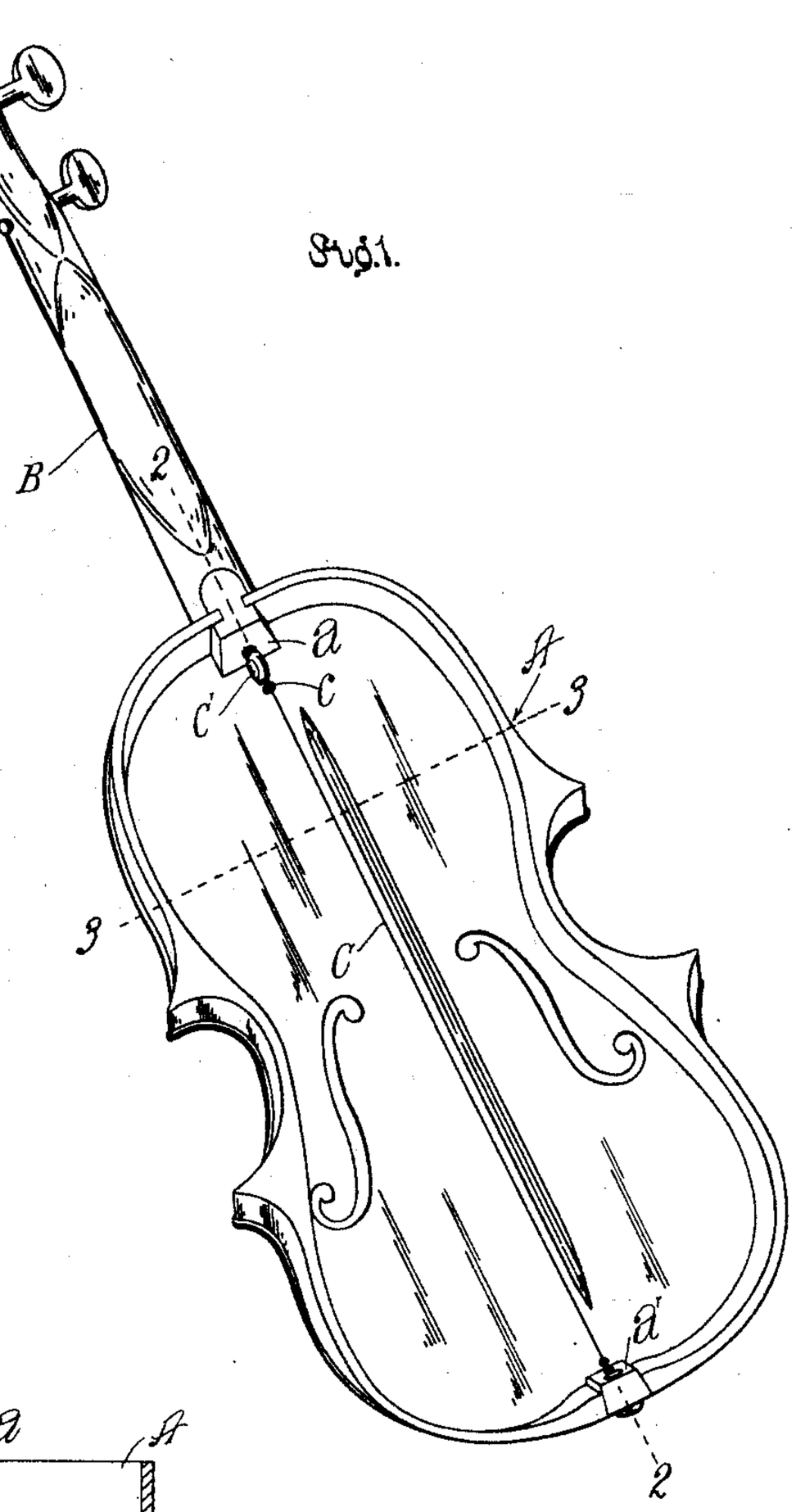


Fig. 3.

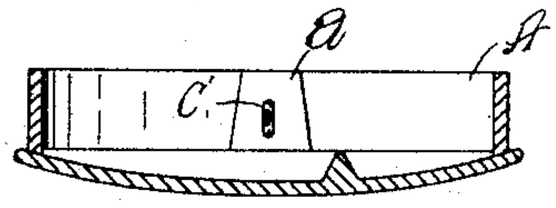
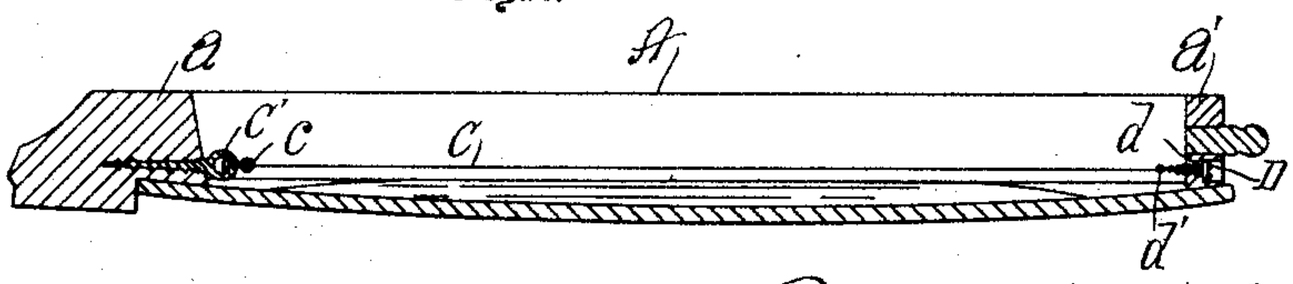


Fig. 2.



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UNITED STATES PATENT OFFICE.

ROBERT SAMPLE AND EMMET SAMPLE, OF LOS ANGELES, CALIFORNIA.

VIOLIN.

SPECIFICATION forming part of Letters Patent No. 622,021, dated March 28, 1899.

Application filed August 31, 1897. Serial No. 650,196. (No model.)

To all whom it may concern:

Be it known that we, ROBERT SAMPLE and EMMET SAMPLE, citizens of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Violins and Analogous Instruments, of which the following is a specification.

Our invention relates to that class of stringed instruments which have internally-arranged strings in addition to those upon which the performer plays.

We have discovered that the principal objection to instruments of this class arises from the fact that the internally-arranged strings, if not placed in exactly the right position within the instrument and secured to individual fastenings each driven endwise into the end of the neck of the instrument substantially parallel with the length of the grain of the neck, will increase the volume of sound, but will impair its quality.

The object of our invention is to increase the power of a violin or analogous instrument and to give it a clear resonant tone which while being loud, clear, and distinct will be absolutely devoid of discords, harshness, and beats. In this respect we have had common cheap violins provided with our improvement pronounced by skilled musicians to yield as pure, sweet, and melodious a tone as the best make of modern violins unprovided with our improvement. Better grades of violins are correspondingly improved by the addition of our invention.

Our invention comprises a violin or analogous stringed instrument having an individual fastening driven endwise into the end of the neck and a resonant string secured at one end to the fastening and at the other end to the tail-end wall of the instrument, the string being arranged substantially in line with the extended axis of the fastening.

Our invention also comprises the improvement which consists in providing for each string an individual fastening, such fastenings being each driven endwise into the end of the neck, the other end of the string being secured to the tail-end wall of the body of the instrument, the strings being arranged substantially parallel with and above the extended axis of the neck of the violin. The closer the strings are arranged to the belly of the instrument the better will be the results secured.

The accompanying drawings illustrate our invention.

Figure 1 is a perspective view of a violin embodying our invention and from which the back has been removed in order to expose the construction. Fig. 2 is a sectional view on line 2 2, Fig. 1. Fig. 3 is a sectional view on line 3 3, Fig. 1, looking toward the neck of the violin.

We have found in practice that in order to secure perfect results it is necessary that each string be secured to an individual fastening and that each of such fastenings be driven endwise into the end of the neck of the violin substantially parallel with the axis of the neck.

In the drawings, A represents the violin, the neck B of which extends through the end of the body of the violin in order that the fastenings may be driven directly into the end of the neck.

C is a resonant string which is attached at one end to a fastening C′, which is screwed into the end of the neck of the violin substantially parallel with the axis of the neck of the violin and has its other end secured to the tail end a' of the violin. The front end a of the side walls of the violin and the tail end a' of the walls of the violin are thus placed in communication with each other; but the principal vibration occurs in the neck of the violin, and by reason of the strings being attached directly to the neck of the violin and by means of a fastening which is driven into the neck substantially parallel with the axis of the neck the resonant qualities of the string are rendered of the highest efficiency. We have found that if the fastening is not driven into the end of the neck of the violin or is touched by anything intermediate the string and the neck of the violin the quality of the tone is impaired.

In practice we have found that in order to secure the best results it is essential that the string be arranged in substantially the position in which it is shown in the drawings—that is to say, it should be arranged

extending along the mid-line of the violin and substantially one-quarter of the entire height of the walls below the top of the walls.

It is essential in order to secure the best results to attach one end of the string to the inner end of the neck of the instrument and the other end of the string to the tail-post at the end of the instrument. The string must be resonant and keyed up to give the proper tone. Suitable means are provided for this purpose. As shown in Fig. 1, this means comprises a screw-eye C', screwed into the end of the neck of the violin and provided with a swivel *c*, passing through the end of the eye, so that the screw-eye may be turned to screw it into or unscrew it from the neck without twisting the string, which string is secured to the swivel by one end and has its other end securely fastened in a socket *a'*, provided in the end of the side wall. The axes of said string and its attaching devices are parallel with the axis of the body of the instrument, care being taken to avoid any cross-arms or any oblique arrangement of the string or its attachments, it being important to avoid vibrations which are not parallel with the axis of the instrument, or otherwise the vibrations of the string will interfere with the vibrations of the body of the instrument and will break up the sound-waves and defeat the object of our invention. We have found by practical experiments that this fact is true, and we believe that the above explanation is correct. It is well known to violinists that a sounding-post if not placed in the proper position in a violin will defeat the end sought to be attained instead of accomplishing it, but we do not know that the reason therefor is thoroughly understood. A slight variation in position will produce a totally different result, and we have found that the same is true with regard to the arrangement of the strings in the instrument.

While in practice we have used violins provided with our improvement for a number of months without any tendency whatever of the string to run down, still we deem it desirable to provide means whereby the string may be keyed up from the outside of the violin in case the string should run down. This means consists of a screw D, extending through the end of the wall of the violin and working through a suitable nut *d*. A swivel *d'* may be provided on the end of the screw, in which to loop the end of the string.

In practice we have found that better results are secured by using a D-string, formed of wrapped wire, and we do not limit our invention to the use of a single string, since several strings which will produce a sympathetic chord may be arranged within the interior of the instrument to be set in vibration by the vibrations of the strings upon which the player is playing. We have, however, secured such good results with a single string that we do not believe that it is necessary to use more than one string in an instrument. There is liability that several strings might run down and get out of tune with each other, so as to produce a discord. This is not liable to occur with the single string, as shown. If more than one string is arranged in the violin, each string must be secured to an individual fastening driven endwise into the end of the neck of the violin, having its axis substantially parallel with the axis of the neck. Otherwise the sound will be deadened and the vibrations impaired.

In practice the string is placed in position in the violin when the violin is manufactured and is made taut by being tuned up to approximately concert pitch. This forms a vibrant connection between the two ends of the side walls of the instrument and places them in a state of tension, which is particularly receptive to sound-vibrations. Furthermore, the vibrations of the neck are by the string transmitted to the tail end of the instrument and by the side walls transmitted to the back and front of the instrument and the sound greatly augmented. It is our opinion that a string placed in the position in which we have shown it in the drawings is at the central or meeting point of the sound-waves, and that thereby the string is set in action by the sound-waves and the vibrations again transmitted to the instrument.

We have found that by taking a cheap violin of common construction and placing our improvement therein the instrument yields a loud clear sweet tone, which it has heretofore been deemed impossible to secure in instruments of common make.

Now, having described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A violin or analogous instrument having an individual fastening driven endwise into the end of the neck, a string secured at one end to the individual fastening and having its other end secured to the tail-end wall of the body and arranged substantially in line with the axis of the body.

2. A violin or analogous instrument having an individual fastening driven endwise into the end of the neck, a string secured at one end to the individual fastening, its other end being secured to the tail-end wall of the instrument, such string being arranged above the axis of the body of the instrument and close to the belly of the instrument.

3. A violin or analogous instrument, provided with a neck having its end passed through the end wall of the instrument and having an individual fastening driven endwise into the end of the neck, a string secured at one end to the individual fastening, and having its other end secured to the tail-end wall of the body, such string being arranged substantially in line with the extended axis of the fastening.

4. In a violin or analogous instrument, the

combination set forth of the neck having its end passed through the end wall of the instrument; the fastening driven endwise into the end of the neck; the string secured at one end to the fastening, and having its other end secured to the tail-end wall of the instrument, such string being arranged above and substantially parallel with the extended axis of the neck, and close to the belly of the instrument.

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Witnesses:
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