July 25, 1950 O. J. KENYON 2,516,467

MUSICAL INSTRUMENT AND METHOD OF FORMING THE SAME

Filed Dec. 28, 1942

FIG.1.

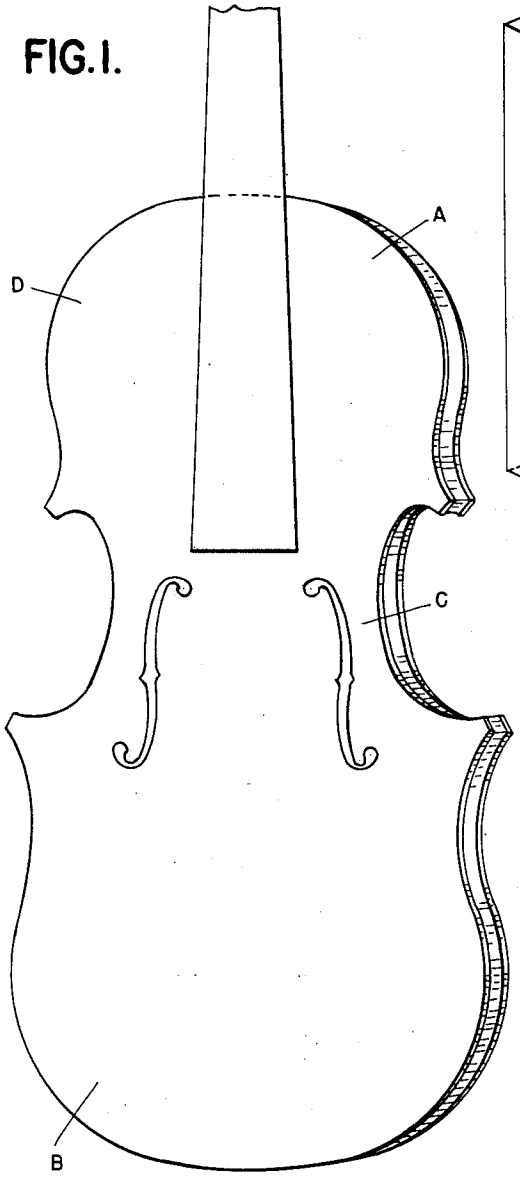


FIG.3.

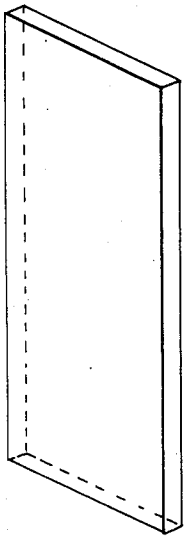


FIG.4.

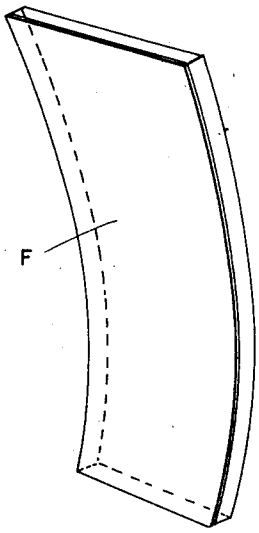


FIG.2.

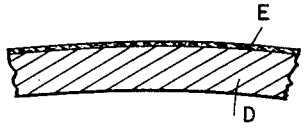
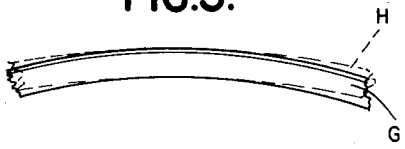


FIG.5.



INVENTOR.
OADES J. KENYON

BY
Whittemore Hulbert & Belknap

ATTORNEYS

Patented July 25, 1950 2,516,467

UNITED STATES PATENT OFFICE

2,516,467

MUSICAL INSTRUMENT AND METHOD OF FORMING THE SAME

Oades J. Kenyon, Santa Barbara, Calif.

Application December 28, 1942, Serial No. 470,368

1 Claim. (Cl. 84—274)

1

The invention relates to musical instruments provided with sounding boards and has more particular reference to stringed instruments of the violin type. It is the object of the instrument to improve the tone quality and increase the life of such instruments and to this end the invention consists in the construction and method as hereinafter set forth.

My invention is based upon a discovery resulting from experimentation carried on over a considerable period of time. All modern violins have what may be called "dead spots," that is, portions of the upper and lower plates that do not vibrate as freely as other portions. I have found that continuous and constant overloading of violins for several months greatly helps this difficulty. Breakage from overloading invariably occurred at the live spot portions of the upper plate. This indicated the stronger and more resistant portions were the dead spots. However, the resistance of the latter portions gradually broke down due to wood fatigue.

I have also discovered that by coating the outer surface of the instrument with a material exerting an abnormal surface tension thereon, an effect is produced similar to that by overloading. In each instance, the sound quality is improved and the power of the instrument increased. It is, therefore, my conclusion that exterior surface tension is an important factor in determining the sound quality and life of the instrument and that by increasing this surface tension, an improvement is obtained.

In carrying out my invention, it is important, first, to select a suitable coating material having the desired characteristics and, second, to apply this coating to the instrument after a pretreatment thereof which has a shrinking effect thereon. For the coating material various materials may be used among which are glues and certain synthetic resins. I prefer the latter as being less influenced by climatic changes or changes in humidity of the atmosphere. One specific material which I have used is that commercially known as "Cascamite" powder which is a urea-formaldehyde resin glue. It is formed as a condensation product by the reaction of urea with formaldehyde in the presence of a suitable catalyst. This material which is water soluble, when properly dissolved and mixed with coloring material such as brown or orange color Diamond Dyes and with water, produces a varnish appearing coating that has the necessary hardness and tensile strength and is most satisfactory. The instrument can be coated with this material alone

2

or finish coats of varnish can be applied over the same with excellent results. The pretreatment consists in placing the instrument in a dry compartment having a temperature of 100° F. and allowing it to remain therein for several hours. This tends to shrink the wood and while in the shrunken state the coating is applied thereto.

In place of the coating material just described, I may use a water soluble glue which is applied in the same manner. This operation is repeated until the desired thickness of glue is obtained after which one or more coats of varnish may be applied depending upon the color effect desired. However, as previously stated, the synthetic resin is superior to the glue in that it is less affected by varying external conditions.

In the accompanying drawings:

Figure 1 illustrates a violin to which my invention is applied;

Figure 2 is a portion of the cross section greatly enlarged illustrating the coating applied thereto; and

Figures 3, 4 and 5 are diagrammatic views showing the effect of the coating applied to the surface of a strip.

String instruments of the violin type including the viola, cello and bass viol are all of substantially the same form. This has a characteristic contour including the rounded upper portion A, the larger rounded lower portion B and the contracted waste portion C. The top plate D is externally convex and the bottom plate (not shown) is of similar form. Figure 2 shows a portion of the top plate which has parallel convex and concave outer and inner surfaces and with the coating E applied to the convex surface. This coating is also applied to all portions of the external surface including the sides and bottom.

The effect of the coating is diagrammatically illustrated in Figures 3 and 4. The former shows a flat strip of wood without any coating applied thereto. Figure 4 shows the same strip having a coating F applied to one side only with the result that the strip is warped to form a concave surface.

Figure 5 shows the effect of the coating applied to a convex surface of a wood strip G and, as indicated in dotted lines at H, the surface tension will produce a flattening of the strip. In a violin or an instrument of the same type, the structure is such as to prevent distortion but the coating will, nevertheless, exert a similar surface tension.

A musical instrument which has been subjected to the treatment as above described has greatly improved tone quality, as well as longer life.

What I claim as my invention is:

A sounding board of a musical instrument of the violin type having a highly tensioned layer of glue lying upon, external of and adhering to the outer surface, and a supercoating of varnish.

OADES J. KENYON.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
Re. 22,124	Ellis	June 23, 1942
121,106	Huntley	Nov. 21, 1871
373,014	Church	Nov. 8, 1887
1,144,435	Severy	June 29, 1915
1,876,984	Lindeen	Sept. 13, 1932
1,950,621	Morse	Mar. 13, 1934

OTHER REFERENCES

Davidson: The Violin: Its Construction, published in London by F. Pitman in 1881.