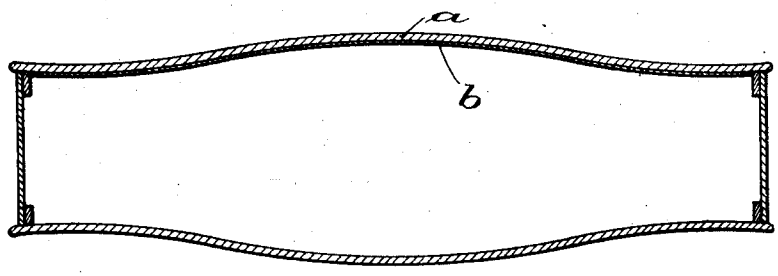
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METHOD OF TREATING SOUNDING BOARDS OF STRINGED INSTRUMENTS

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METHOD OF TREATING SOUNDING BOARDS OF STRINGED INSTRUMENTS.

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Hitherto various methods have been suggested for improving the tone of string instruments, in particular violins. In accordance with these known methods the instrument either is treated externally by means of special substances or is mechanically modified internally, or the bottom and top boards are covered or coated with special materials.

The improvement of the tone of the instrument results from the production of fine elastic membranes over the pores of the wood, said membranes being adapted to increase or intensify the resonance of the wood. In the prior art said elastic membranes were produced by means of solutions which were painted on the wood, but all of the old methods failed since the coats given to the wood lost their elasticity after a longer or shorter space of time and the useful effect thereof then was over. In most cases a contrary effect would then be produced. The hardened substances produced disagreeable wrong notes. In violins the sounding waves are mainly distributed by the resonance or sounding-board, the frame and the lower board or bottom having a minor effect only.

The present invention relates to a method which, as regards its effect, is independent of solidified solutions. The object of the new method is to give the resonance or sounding-board and, if desired, also the lower board or bottom of the instrument, such a tension as to cause all of the wooden parts to vibrate uniformly. At the same time, however, a lowering effect will be produced whereby the resonance vibrations are shortened which is necessary in order to ensure a wider range of the sound.

With this object in view the inner surface of the sounding board is coated with a fine fabric, preferably made of silk, in such a manner that the said fabric or tissue will be in intimate contact all over with the face of the wood. To fix and firmly connect the said fabric to the wood a suitable agglutinant is employed which may be of animal or vegetal or even inorganic nature.

The provision of a fixed layer of fabric of this kind ensures that all parts of the wood are brought in connection with each other in order to cause the whole board to vibrate uniformly. All harshness and wrong or discordant notes disappear. The fabric in coaction with the agglutinant overlies the pores and acts to form microscopically fine membranes. At the same time, however, there remains in the fibres of the fabric a countless multitude of fine air holes or vesicles adapted to act in their turn as tiny resonance or sounding bodies.

The timbre of a thus treated or constructed instrument depends on the thickness of the layer of fabric employed and on the nature of the agglutinant. If a very fine fabric made of silk and a soft agglutinant are employed, very soft or sweet notes will be produced, whereas a stronger, thicker or coarser fabric and in particular when used in combination with a hard agglutinant, will produce stronger and vigorous vibrations and correspondingly intensify the sound or notes, but in all and any cases the uniformity or evenness of all the sounds or notes will be the same. Hence by properly selecting a particular sort of agglutinant and a particular kind of fabric any desire with regard to the timbre of the instrument may be complied with.

In some cases it may be found necessary to provide special improving means for the G-string and the D-string. In accordance with the present invention the note or sound from the G- and the D-string will be essentially improved or intensified if the outer edge of the inner side or face of the resonance board is provided with a double layer of fabric or if the layer or fabric is fixed and connected to the board by means of a hard agglutinant, or if both expedients are adopted.

The high tones will be of a particularly soft and sweet timbre in case the median section of the board is provided with a layer of very fine silk fabric attached to the board by means of a soft elastic agglutinant. If it is desired to protect the agglutinant from the action of moist air it will be advisable to give the properly attached protective fabric a coat and to use for the latter purpose a solution of resins (varnish) or drying and resinifying oils.

The accompanying drawing shows a cross-sectional view of a violin, the inner or lower surface of the sounding board *a* of which is covered with a fine silk fabric *b* that is firmly secured thereto by a suitable agglutinant.

From the foregoing description it will be seen that simple and efficient means are herein provided for accomplishing the object of

the invention, but while the means described are well adapted to serve the purposes for which they are intended, it is to be understood that the invention is not limited to the precise provision, arrangement or adhibition thereof set forth, but includes within its purview such changes as may be made within the scope of the appended claims.

Having now described and ascertained the nature of my invention and the manner in which the same is to be performed I now declare what I claim and desire to secure by Letters Patent of the United States:

1. The method of treating the sounding board of a string instrument, which consists in spreading a layer of fine fabric in a relatively untensioned state upon and over the inner surface of the vibrating portions of the sounding board, spreading a second layer upon and over the first layer at those sections of the sounding board the vibrations of which are to be intensified, and attaching the two layers of fabric to the board by means of an agglutinant.

2. The method of treating the sounding board of a string instrument, which consists in spreading a layer of silk in a relatively-untensioned state upon and over the inner surface of the vibrating portions of the sounding board, and attaching the silk firmly to the board by means of a soft agglutinant.

3. The method of treating the sounding board of a string instrument, which consists in spreading a fabric in a relatively-untensioned state upon and over the inner surface of the vibrating portions of the sounding board, attaching the fabric firmly to the board by means of an agglutinant, and superimposing upon the fabric a resinous coat to protect it from the influence of moisture.

4. The method of treating the sounding board of a string instrument, which consists in spreading a layer of fine fabric in a relatively-untensioned state upon and over the inner surface of the vibrating portions of the sounding board, spreading a second layer upon and over the first layer at those sections of the sounding board the vibrations of which are to be intensified, attaching the two layers of fabric to the board by means of an agglutinant, and coating the same with a varnish for protection against moisture.

In testimony whereof I affix my signature.

PAUL A. R. FRANK.