No. 712,550. Patented Nov. 4, 1902.

# M. KRIWULKA & P. E. HOLMQUIST.

## VIOLIN.

(Application filed Jan. 11, 1902.)

(No Model.)

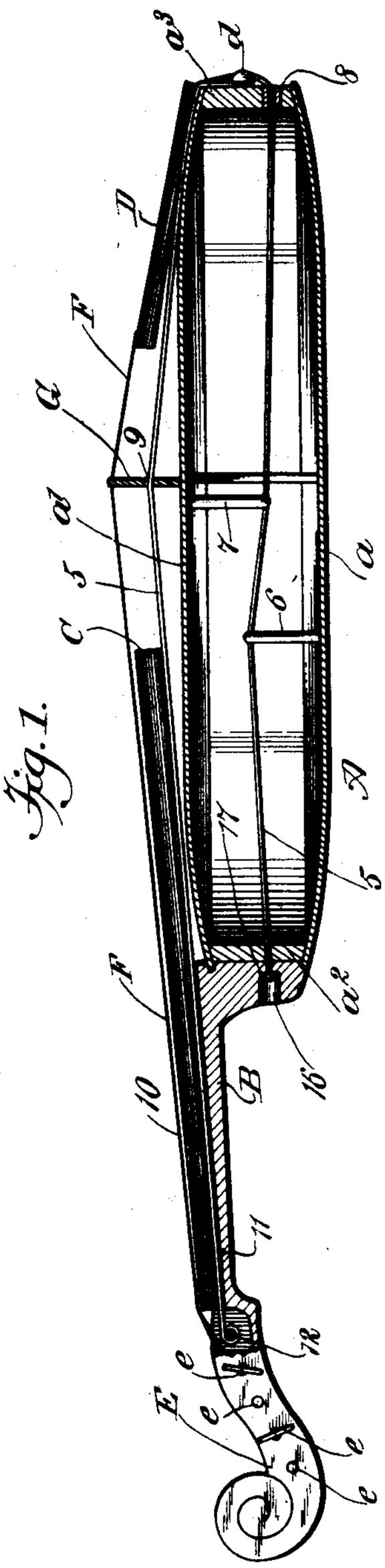


Fig. 1.

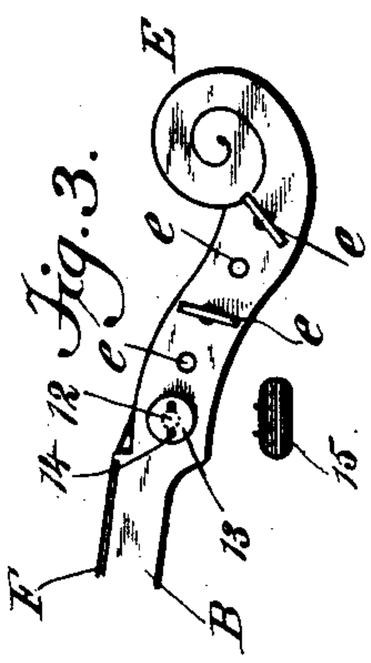


Fig. 3.

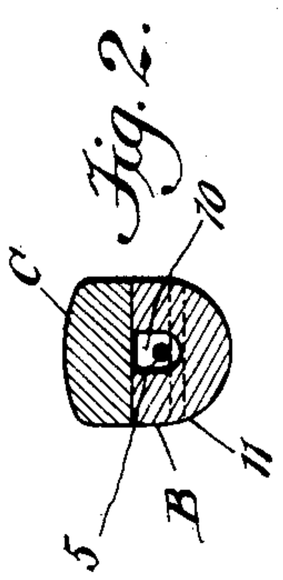


Fig. 2.

WITNESSES:

A. R. Upplemann Jr.

H. J. Berukard

INVENTORS
Martin Kriwulka
Peter E. Holmquist
BY
Munn & Co
ATTORNEYS

# UNITED STATES PATENT OFFICE.

MARTIN KRIWULKA AND PETER E. HOLMQUIST, OF PHILADELPHIA, PENNSYLVANIA.

## VIOLIN.

SPECIFICATION forming part of Letters Patent No. 712,550, dated November 4, 1902.

Application filed January 11, 1902. Serial No. 89,276. (No model.)

*To all whom it may concern:*

Be it known that we, MARTIN KRIWULKA, a subject of the Emperor of Austria-Hungary, and PETER E. HOLMQUIST, a subject of the King of Sweden and Norway, both residents of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Violins, of which the following is a full, clear, and exact description.

Our invention relates to violins of all classes and to analogous bow instruments.

The object of our invention is to provide means for exerting strain or tension on the body of the instrument, so that the necessity for frequent tightening of the usual strings will not be apparent and the instrument will not so readily lose its tension over night or after the lapse of any short interval of time, and at the same time to secure a more powerful, clear, and voluminous changeable resonance in tone and its equal distribution.

One advantage of our improved construction resides in a comparative freedom from warping due to atmospheric changes.

Another advantage is that the resonance-string can be tuned to any desired height, so as to secure the desired tones and pitch to bring the instrument into harmony with a cornet or other wind instrument, or the resonance-string can be toned down from a high pitch to suit any desired tone between wooden or metallic tones.

With these ends in view our invention consists in the novel construction, arrangement, and adaptation of parts comprising an improved violin or analogous instrument, as will be hereinafter fully described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional elevation through our improved instrument, the plane of the section being taken centrally through the instrument. Fig. 2 is an enlarged cross-section taken through the neck and the finger-board of the instrument, illustrating the changes which are necessary in the construction of an ordinary violin to embody our improvements therein. Fig. 3 is a detail view of the head, showing the supplemental peg which is provided for the accommodation of the resonance-string, also illustrating the key for the adjustment of said peg.

The body A, the neck B, the finger-board C, and the string-holder D are similar in all substantial respects to ordinary violins. As is usual in the art, the body consists of the bottom $a$, the top $a'$, and the front and rear end pieces $a^2$ $a^3$, all of which are joined together in any approved way. The neck B is united to the front end $a^2$ of the body, and it terminates in the head E, the same being equipped with the usual number of keys $e$. The string-holder D is attached in any usual way to the knob $d$ on the rear end $a^3$ of the body, and to this string-holder is fastened the series of strings F, which lead over the bridge G and the finger-board C, said strings being attached individually to the keys $e$.

The instrument as thus far described is similar to ordinary violins, and we will now proceed to describe our improvements by which we are able to secure the advantages hereinbefore mentioned.

The leading feature of our invention consists in the employment of a resonance-string, (indicated at 5,) said string extending longitudinally through the sound-chamber of the body A and also extending lengthwise beneath the string-holder, through the bridge, beneath the finger-board, and attached at one end to the head of the neck, the other end of said resonance-string being secured in or to the body, whereby the resonance-string has two lengths arranged below and above a sound-board, which is formed by the top $a'$ of the body.

In carrying our invention into practice we employ the sound-posts 6 7, which are disposed within the sound-chamber of the body and engage with the bottom and the top, respectively, of said body. The two posts are arranged in spaced relation, and they extend from opposite sides of the body, as shown by Fig. 1. The post 6 rests upon or is attached to the bottom $a$, and in its upper free end said post is formed with a notch or other passage-way for the accommodation of the resonance-string. The other post 7 is attached to or bears against the top $a'$, and its lower end is formed with a

notch or other passage-way for the resonance-string. We prefer to employ sound-posts which are of such length that they extend beyond the median line of the sound-chamber, thus making the inner ends of the posts overlap a line drawn centrally through the chamber.

8 designates a metallic bushing, which is secured firmly in the rear end $a^3$ of the body, said bushing having an eye or passage which enables the resonance-string 5 to pass freely through said bushing.

The bridge G of the instrument is provided below the usual string-notches with an aperture 9, the same allowing the resonance-string 5 to pass freely through said bridge without hindrance from or engagement with the ordinary strings of the instrument.

The neck B is provided with a longitudinal groove or channel 10, the same being formed centrally in the neck and arranged to open through the upper face thereof, as shown more clearly by Fig. 2. This neck is further provided at a point near the head E with a transverse groove, which is adapted to receive a metallic bridge 11, reference being had to Fig. 1 and to dotted lines in Fig. 2.

In addition to providing the series of tuning pins or keys *e* in the head of the instrument we provide a supplemental metallic peg 12, the same being preferably located in the rear of the tuning-keys, as shown by Fig. 1. This peg is rotatably mounted in the head, and at one end it is provided with an enlargement or disk 13, said enlargement having sockets 14, adapted to receive the projections on the key 15, reference being had to Fig. 3.

The resonance-string 5 may be attached to the end piece $a^2$ of the body or to the neck B by any suitable or preferred means, and in Fig. 1 we have shown one means for firmly securing said end of the string in place. A socket or cavity 16 is formed in the body or the neck to receive the headed end 17 of the resonance-string; but any equivalent means for this mode of securing the string may be adopted. The resonance-string having one end secured at 17 to the body is carried longitudinally through the sound-chamber, so as to engage with the upper end of the post 6 and the lower end of the post 7. This resonance-string is carried out of the sound-chamber through the eye in the bushing 8, and from thence the string 5 is led up over the string-holder knob *d*, beneath the string-holder D, through the perforation 9 in the bridge G, beneath the finger-board C, through the channel 10 in the neck, over and in contact with the metallic bridge 11, and, finally, its other end is secured firmly to the metallic peg 12. Any desired means may be substituted for this peg in order to provide for placing the resonance-string under tension.

If desired, the sound-post 7 may be made of wood or of metal; but as a rule we prefer to make the sound-post 6 of wood.

From the foregoing description, taken in connection with the drawings, it will be seen that the peg 12 may easily be adjusted by means of the key 15 in order to coil or wind the resonance-string thereon, thereby straining the resonance-string and making it bind or draw the several parts of the instrument firmly together, whereby the instrument will be reinforced or strengthened, so as to minimize the tendency to warp or strain under atmospheric changes, and at the same time the tension of the usual strings will not be so liable to change over night or after the lapse of any short interval of time. By extending the string so that one length thereof will pass through the sound-chamber and supporting said length of the string by posts within said sound-chamber we are able to secure a clearer and more voluminous changeable resonance and to also attain a more equable distribution of the musical tones.

After the metallic bridge 11 shall have been located in the neck B the resonance-string may be easily and quickly adjusted to the instrument. This string 5 is in two lengths or sections, a short length from the string-holder to the old bridge and a longer length from the old bridge 9 to the new bridge 11. These two parts or lengths of the string are of different pitch, due to the ratio of the lengths or parts of the string.

Although we have shown and described our invention as specifically embodied in a violin of one class, it will be evident that the improvements may be applied to different classes of violins and that the gist of our invention may also be availed of in the construction of analogous instruments.

Although we have shown and described the violin as having a single resonance or binding string, we do not desire to confine ourselves to the use of only one string, because it is evident that the string may be duplicated or a dummy string may be used in addition to the resonance-string.

In case it is desired to use more than one string the additional string or strings are arranged alongside of the resonance-string. If one of the strings is to be a "dummy" or silent string, its employment tends to still further brace and strengthen the instrument in a longitudinal direction.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. In an instrument of the class described, a resonance-string having one length thereof extending through the sound-chamber of the instrument and another length arranged over the sound-board of said instrument.

2. In an instrument of the class described, a resonance-string extending through the sound-chamber and over the sound-board thereof, one end of said resonance-string being fastened to the body and the other end being connected with a suitable tension device.

3. In an instrument of the class described, the combination of posts located within a

sound-chamber and a resonance-string attached to the body of the instrument, and engaging with said posts and having a length which is carried over the sound-board and attached to a suitable tension device.

4. In an instrument of the class described, the combination of sound-posts projecting in opposite directions from opposite sides of a sound-chamber, the inner ends of said posts being carried beyond a line drawn centrally through the chamber, in combination with a resonance-string stretched through the sound-chamber and engaging with said inner ends of the posts.

5. In an instrument of the class described, the combination with a sound-chamber, and a sound-board, of a bushing in one end of the sound-chamber, a post in said chamber, a resonance-string stretched over the post and through the bushing and having one end carried over the sound-board, and a suitable tension device.

6. An instrument of the class described, having a grooved neck below the usual finger-board, and a resonance-string stretched through the sound-chamber of the body and carried over the sound-board and through the grooved neck, said string being also connected with a suitable tension device.

7. An instrument of the class described, provided with a grooved neck and with a metallic bridge which intersects said groove in the neck, a resonance-string stretched through the sound-chamber and through the grooved neck to engage with said bridge, and a suitable tension device engaging with said string.

8. An instrument of the class described comprising a body, a neck terminating in a head, a bridge having a perforation below the string-seats, a string having one length thereof stretched through said perforation of the bridge, and the other length of said string being stretched through a sound-chamber of the body, one end of the string being attached to the body and the other end being connected to a tension device which is mounted in the head of the instrument.

9. An instrument of the class described, having posts within the sound-chamber thereof, a bushing at one end of the body, a bridge having a string perforation below the usual string-seats, a grooved neck, a metallic bridge on said neck, a peg adjacent to said bridge, and a string attached at one end to the body and at its other end to said peg, said string being arranged in engagement with said posts extending through the bushing and the perforation of the string-bridge, and the groove of the neck, and adapted to rest on the metallic bridge.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

MARTIN KRIWULKA.
PETER E. HOLMQUIST.

Witnesses:
H. H. SINNAMON,
JOHN HAMMOND.