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 VIOLIN AND LIKE STRINGED MUSICAL INSTRUMENT.  
 APPLICATION FILED NOV. 23, 1905.

919,722.

Patented Apr. 27, 1909.

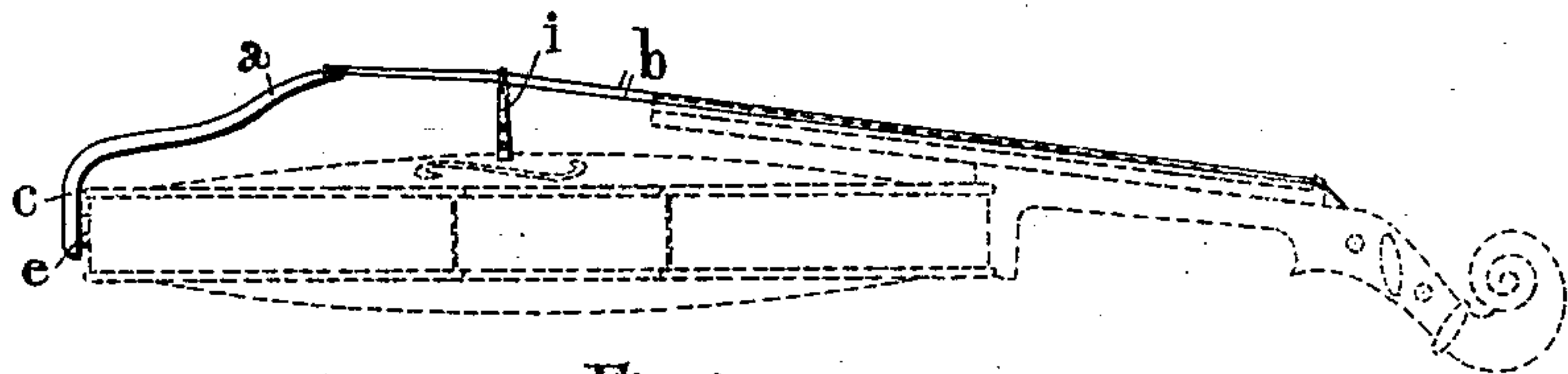


Fig. 1.

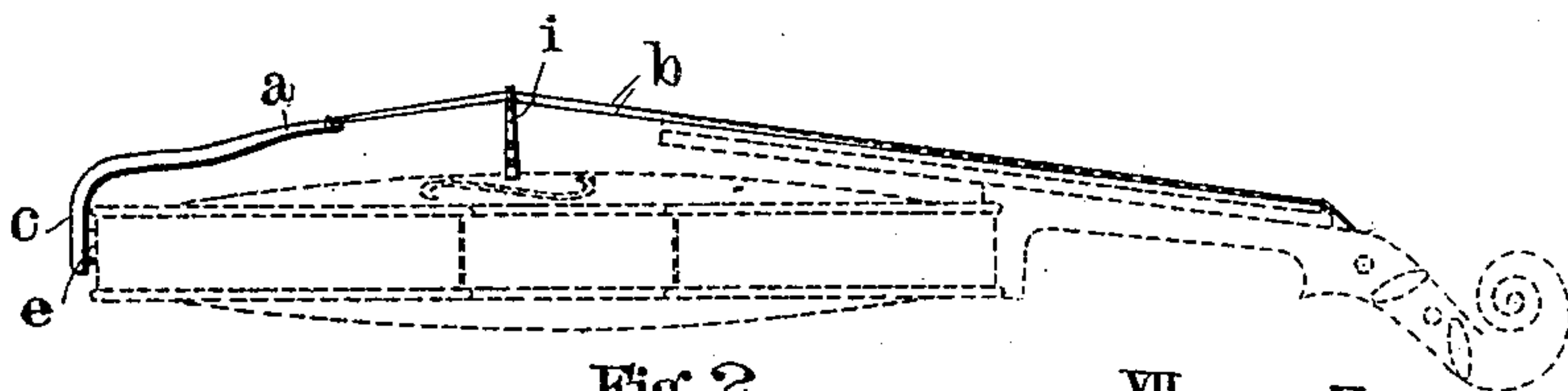


Fig. 2.

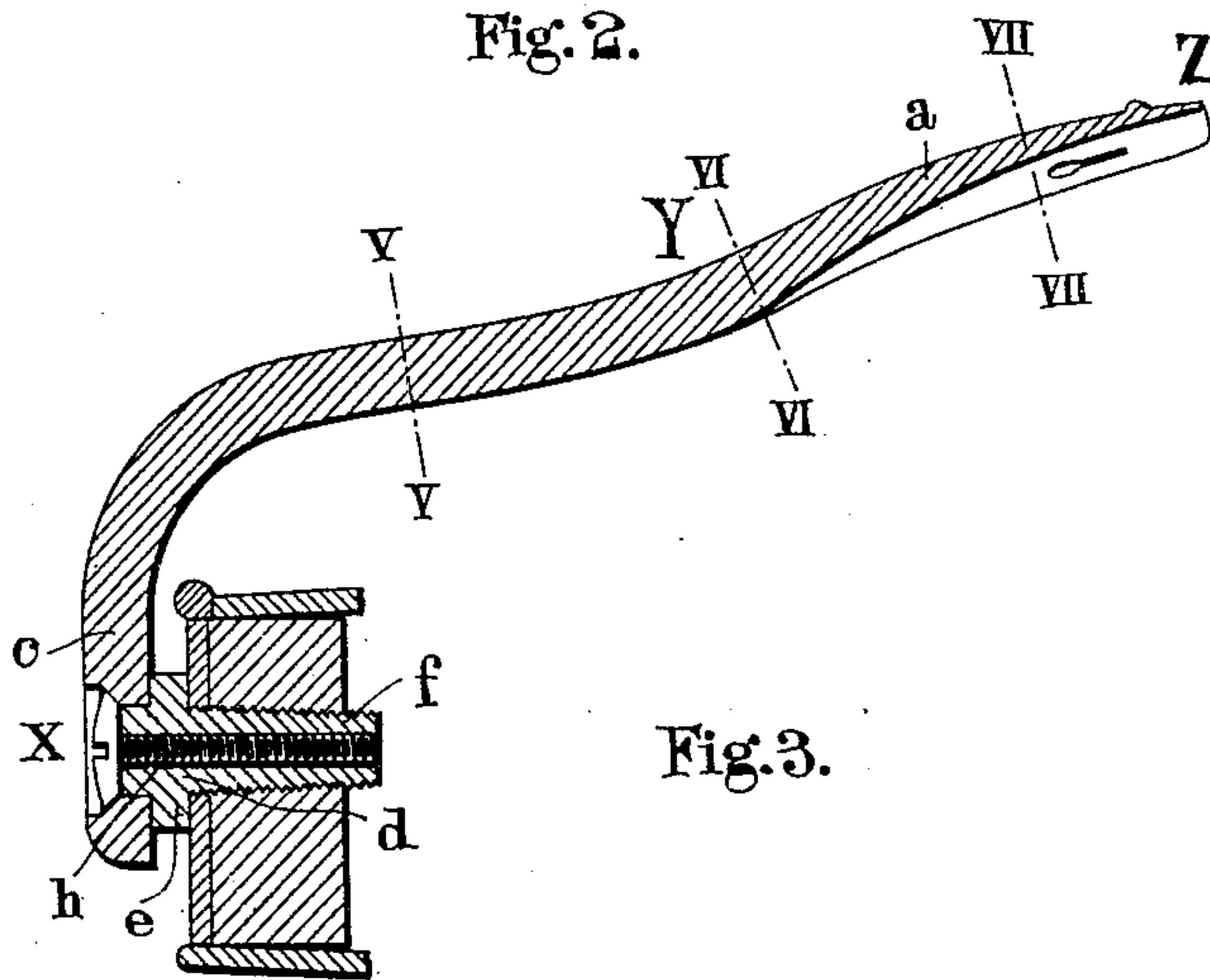


Fig. 3.

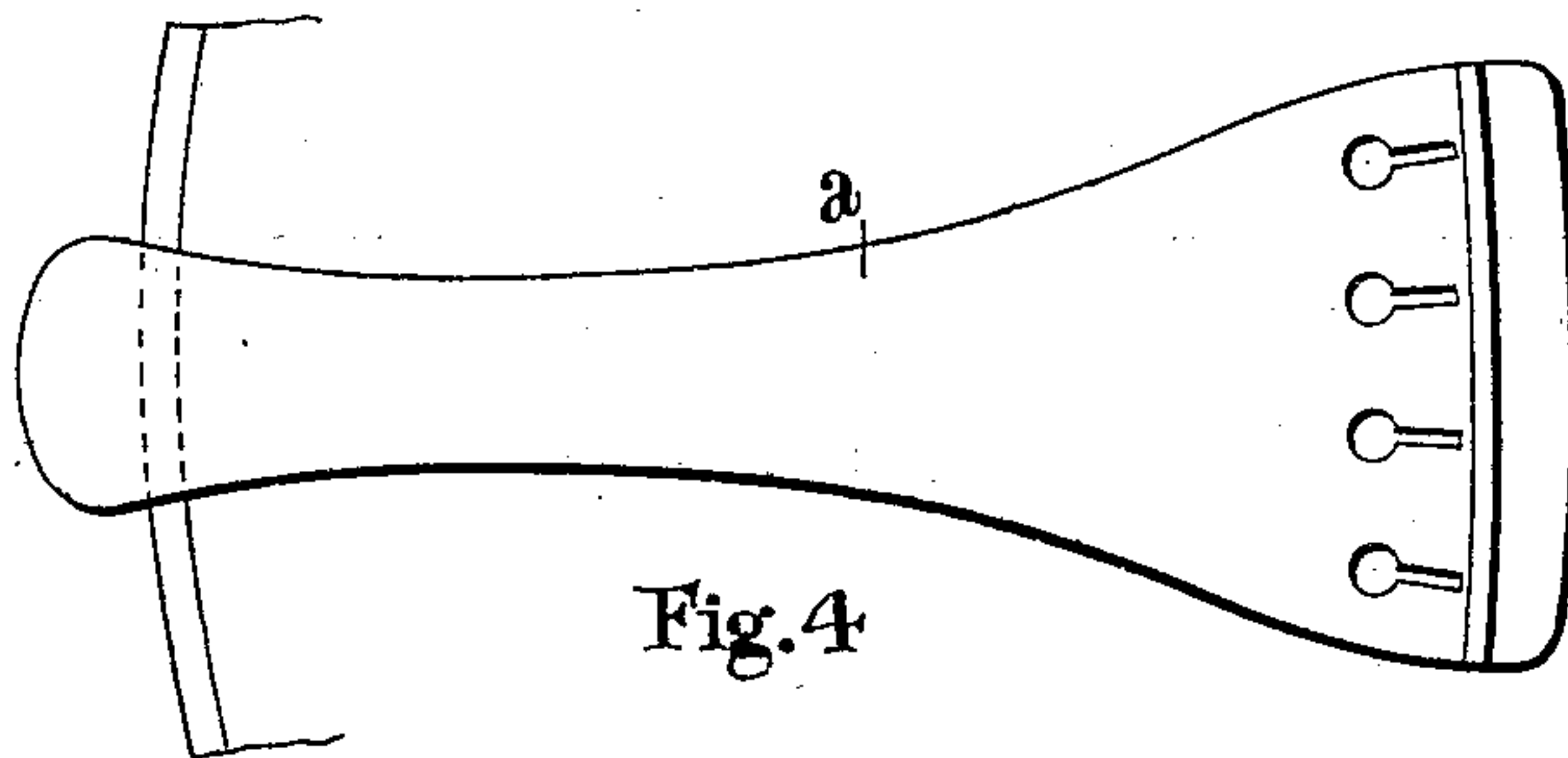


Fig. 4.



Fig. 5.

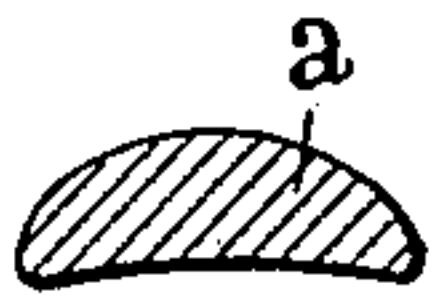


Fig. 6.



Fig. 7.

WITNESSES  
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ATTYS



# UNITED STATES PATENT OFFICE.

MARSHALL BROWNE HERN, OF LONDON, ENGLAND.

VIOLIN AND LIKE STRINGED MUSICAL INSTRUMENT.

No. 919,722.

Specification of Letters Patent.

Patented April 27, 1909.

Application filed November 23, 1905. Serial No. 288,809.

*To all whom it may concern:*

Be it known that I, MARSHALL BROWNE HERN, of Regent House, Regent street, in the county of London, England, manager, have invented certain new and useful Improvements in and Relating to Violins and Like Stringed Musical Instruments, of which the following is a specification.

This invention relates to devices for securing resonance in stringed musical instruments such as violins, violoncellos, violas, and the like.

Hitherto the strings of the violin for example are supported by a bridge which in turn is supported by the table or belly of the instrument. As the strings are stretched very tightly the belly of the instrument is subjected to very great pressure, which it is found affects the quality of the sounds emitted so that they are not so perfect as they otherwise might be.

The object of this invention is to improve and increase the resonance and tone of the instrument.

The invention consists in the provision of means whereby the downward pressure of the bridge upon the belly of the instrument, due to the tightly stretched condition of the strings, is made adjustable and reduced, while at the same time, the amount of vibration imparted through the usual bridge piece is increased.

The invention will now be described with reference to the accompanying drawings, in which,

Figures 1 and 2 show the invention applied to a violin which shown in dotted lines Fig. 1 shows the position of the tailpiece before the strings are tightened, while Fig. 2 shows its position after tightening the strings. Figs. 3 and 4 are respectively a sectional elevation and plan on a larger scale showing the tail-piece and the means for connecting the same to the instrument. Figs. 5, 6 and 7 are cross sections taken on the lines V—V, VI—VI, VII—VII respectively.

In carrying the invention into effect according to one form the tailpiece *a* to which the strings *b* are attached, is made in a curved springy form, and instead of being attached to the end of the violin, shown in dotted lines, by a catgut loop as heretofore, it is provided with a downwardly curved end *c* and firmly secured into the end of the instrument after the manner shown in Fig. 3. This figure shows the whole fitting in section

and approximately full size. The downwardly curved end *c* is made with a hole to receive the outer end of an end pin *d* carrying a flange or collar *e* to fill up the space left by the projecting fillets of the top and bottom sides of the instrument. The inner end of the end pin is made as a threaded tapering extension *f* so that it may be screwed into the soft block inside the instrument. The tail-piece is then secured in position by the head of the set screw *h* which screws into the end pin *d*; any other suitable method of fastening may be used.

Before the strings *b* are properly stretched the tailpiece *a* assumes the position shown in Fig. 1, but when sufficiently stretched, the free end of the tailpiece is drawn down and flattened in the manner shown in Fig. 2. The free end of the tailpiece has therefore a constant tendency to rise upward and thereby exert a force which acts upwardly and oppositely to the downward force upon the usual bridge *i* as exerted upon the same by the tightly stretched strings. By this means the pressure upon the belly is reduced to a minimum consistent with that necessary to secure proper vibration and carrying power.

The flexible tailpiece *a* above described is made of a material which is tough, resonant and flexible such as vulcanite or any other material if found suitable, may be used or the flexible tailpiece may be constructed in any manner that will render it flexible, such as making it in sections, and connecting them by springs. Galalith is a substance prepared from dried compressed milk and dyed to a suitable color.

By the use of a flexible tailpiece as above described some of the downward pressure exerted upon the belly is absorbed by the flexibility of the tailpiece, which insures a certain amount of freedom to the strings, and results in the instrument emitting a brilliant tone of penetrating quality.

It is found advantageous to use a tailpiece approximately the thickness shown in Fig. 3 when applying it to a new instrument. When, however, it is applied to an old instrument and one in which the wood has increased in elasticity and become very sensitive, it is preferred to use a tailpiece which is thinner and more flexible.

It will be understood that the tail piece is not of the same degree of flexibility throughout. The forward portion or free end which constitutes the tail piece proper is the por-



tion which is flexible whereas the rearward portion forms the support and is comparatively rigid and non-flexible. Reference to Figs. 3 and 4 will make this clear as it will be  
5 noticed that the rearward portion is thick throughout whereas the forward portion gradually decreases in thickness. In other words the portion between X and Y forms a support for the forward flexible portion or  
10 tail piece proper which is situated between Y and Z. In practice the forward portion or free end bends or flexes just about the point Y.

The invention thus comprises a flexible  
15 tail piece proper and means—such as the integral rear non-flexible portion—for supporting the same above the belly of the instrument so that the free end will flex sufficiently to allow the strings to be brought down onto  
20 the bridge but will yet relieve the latter of much of the downward force it would otherwise receive if the ordinary loose tail piece were used as hereinbefore described.

The support for the tailpiece may take any  
25 suitable form and may be made in the form of a supplementary bridge of any length or extending over the belly and resting by its

ends upon the edges of the violin; or a support might be placed under the back end of the tailpiece. 30

From the foregoing it will be understood that when the tailpiece is applied to a violoncello or a double bass instrument it is exactly the same in principle but it is made in a correspondingly larger size, and the set  
35 screw *h* is replaced by a movable supporting leg as is usual in such instruments.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:— 40

In violins, violoncellos and the like, the combination of a curved flexible tailpiece, a hole in one end thereof, a flanged end pin rigidly secured in the end wall of the instrument and a central screw for attaching the  
45 end of the tailpiece to the end pin.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MARSHALL BROWNE HERN.

Witnesses:

ALBERT E. PARKER,  
FRANCIS J. BIGWELL.