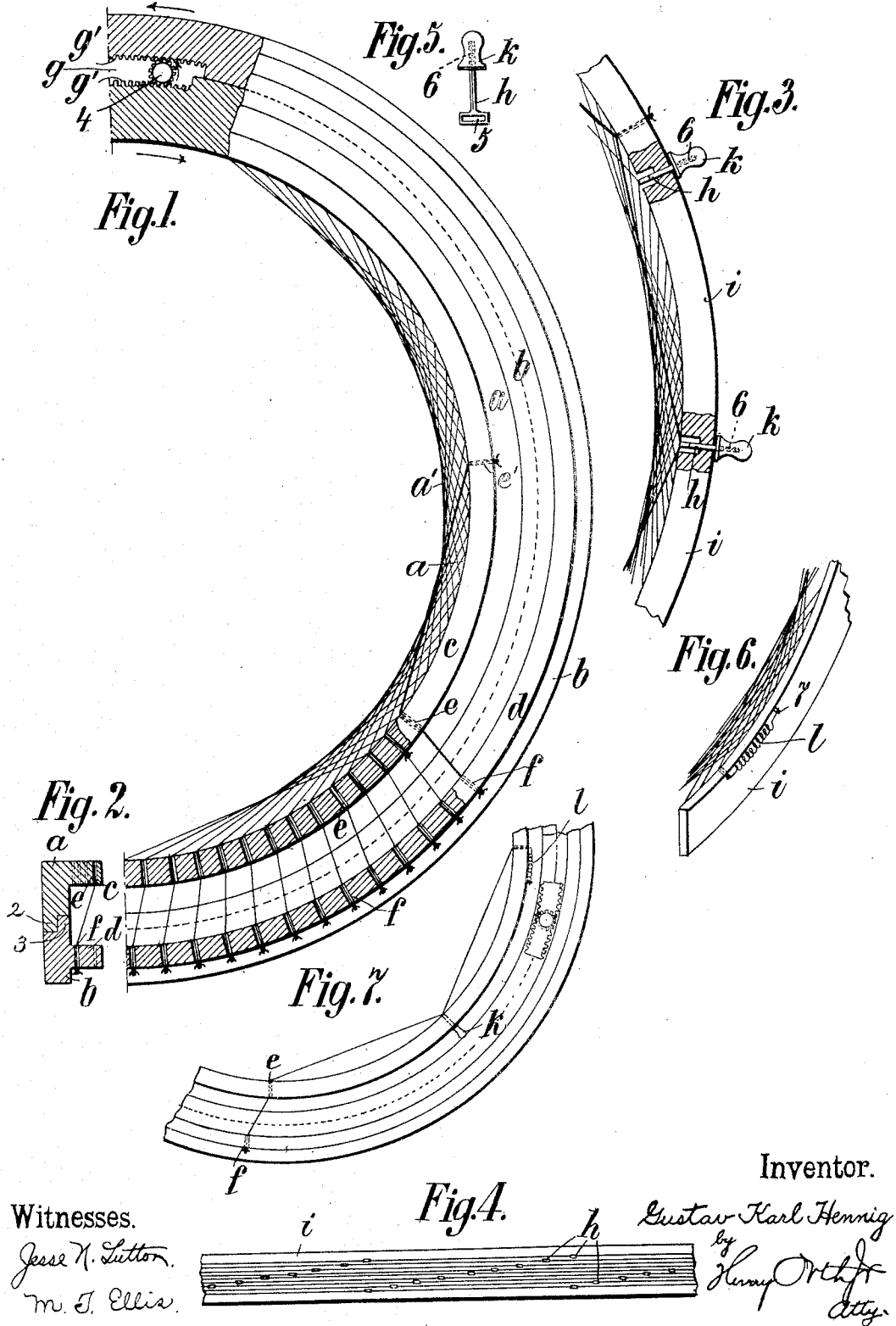


G. K. HENNIG.
RING BOW FOR PIANO VIOLINS.
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946,775.



Witnesses.
Jesse N. Lutton.
M. J. Ellis.

Inventor.

Gustav Karl Hennig
by
Henry Orth
Att'y.

UNITED STATES PATENT OFFICE.

GUSTAV KARL HENNIG, OF WAHREN, GERMANY, ASSIGNOR TO LUDWIG HUPFELD AKTIENGESellschaft, OF LEIPZIG, GERMANY.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GUSTAV KARL HENNIG, a subject of the King of Prussia, residing at 2 Bahnhofstrasse, Waren, Saxony, Germany, have invented certain new and useful Improvements in Ring-Bows for Piano-Violins; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to ring bows and more especially to such as are used in connection with piano violins and it has for its object to provide means for tensioning the hairing of such bows as will hereinafter be more particularly described and claimed.

Referring to the drawings in which like parts are similarly designated: Figure 1 is a plan view of part of a ring bow; Fig. 2 is a transverse section of Fig. 1; Fig. 3 is a plan view partly in section illustrating a modification; Fig. 4 is a side view of a portion of the modified bow, showing the arrangement of the tensioning devices in overlapping inclined series; Fig. 5 is a detail of one of the tensioning devices shown in Fig. 3; Fig. 6 is a perspective of a portion of a bow illustrating another modification; and Fig. 7 is a plan view showing the two forms of independent adjustment.

Referring more particularly to Figs. 1 and 2, *a* indicates the inner ring of the bow provided with hairing *a'* stretched as chords on such ring so as to produce, as nearly as possible, a circle within the bow and said hairing is stretched between perforations *e* in a flange *c* at the inner edge of the ring *a*. The hairing may be horse-hair, silk or any suitable material and it is stretched between perforations in single fibers or in groups of fibers and in Fig. 1 I have shown a fiber or group of fibers secured at one end in a perforation *e'* in a flange *c*, at the other end and passing through the perforation *e* and thence secured in a perforation *f*, in a flange *d*, in an outer ring *b* concentric with and rotatable with respect to the portion *a*. The portion *a* of the bow is provided with a rabbet 2 that fits a rabbet 3 of the portion *b*. At some point in the ring, I cut a recess

g at the adjacent edges of the portions *a* and *b* and provide each edge within the recess *g* with rack teeth *g'* that face one another. Operating between these racks *g'* is a pinion 4 rotated by any suitable means. By rotating the pinion 4 in the direction, of the arrow shown thereon, the portions *a* and *b* will be rotated in opposite directions to tension the hairs *a'* and obviously if the pinion 4 be operated in the opposite direction the hairs are slackened.

In order to accomplish the tensioning of each individual hair or group of hairs I provide a bow *i* as shown in Figs. 3 and 4, where each hair is tied or secured at its end in the eye 5 of a tensioning wire *h*, which tensioning wire *h* is preferably, but not necessarily angular in section at its shank and on its end, the shank is threaded as at 6. On the threaded end 6 is screwed a knob *k* which abuts against the ring *i* so that by screwing on the knob *k* the wire *h* will be drawn radially outward to tension the hair or group of hairs. Obviously the ends of the hairs or groups of hairs may be secured in perforations in the ring *i*, being passed through the eye of a tensioning wire situated between the ends of the hair thus forming two chords. The arrangement of such individual tensioning devices is shown in inclined overlapping series in Fig. 4.

Instead of the tensioning device shown in Fig. 3 I may make use of a coil spring *l*, Fig. 6, having one end secured at 7 of the bow *i* and the other end secured to each hair or group of hairs so as to maintain the individual tension. The means of adjustment and tensioning may be combined as shown in Fig. 7.

In Figs. 3 to 6 I have shown means for adjusting the tensioning of each individual hair or group of hairs, but this mode of tensioning the hair is quite tedious and takes considerable time, should it be desired to release the tension of the hairing after playing and retension it when it is desired to play again. In order to release the tension of all the hairs or groups of hairs in such a bow simultaneously and still permit the independent adjustment of them, such tensioning devices may be placed on the flange *d*, Fig. 1 and connected to the ends of the hairs or group of hairs at the perforations *f*, this will permit the tensioning of each individual hair or group of hairs and at the same time per-

mit the tension of the entire bow to be released or increased simultaneously at will.

I claim:

1. The combination with a ring bow, of
5 means for simultaneously tensioning all the hairs or groups of hairs of the bow.
2. A ring bow comprising two concentric rings slidable with respect to one another, and hairs secured at a point in one ring and
10 at another point in the other ring and means to relatively displace the rings.
3. A ring bow comprising two concentric rings slidable with respect to one another and hairs secured at a point in one ring and at
15 another point on the other ring, means to relatively displace the rings and means to independently adjust the tension of each hair or group of hairs.
4. The combination with a ring bow, of
20 means to independently adjust the tension of each individual hair or group of hairs arranged around the periphery of the bow.
5. The combination with a ring bow, of means to independently adjust the tension
25 of each hair or individual group of hairs comprising a tensioning wire having an eye through which the hair passes a threaded shank passing through the bow and a knob capable of being screwed on the threaded
30 portion of the shank and abutting against the bow.
6. The combination with a ring bow, of

means to adjust the tension of each individual hair or strand of hair said means arranged in inclined series around the periphery of the bow. 35

7. The combination with a ring bow, of means to adjust the tension of each individual hair or strand of hair, said means arranged in inclined overlapping series around
40 the bow and means to simultaneously adjust the tension of the entire hairing of the bow.

8. The combination with a ring bow, of means to hold each hair or group of hairs under spring tension, means to regulate the
45 tension of each hair or group of hairs and means to vary simultaneously the tension of all the hairs or groups of hairs.

9. In a ring bow, the combination of two ring parts rotatable with respect to one another, racks on each part, a pinion engaging
50 the racks, hairs or groups of hairs secured to one of the parts, springs secured to the other part to which the hairs are also secured and tensioning members mounted in the first
55 part and engaging the hairs or groups of hairs.

In testimony that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

GUSTAV KARL HENNIG.

Witnesses:

EMIL GREUDFREER,
RUDOLPH FRICKE.