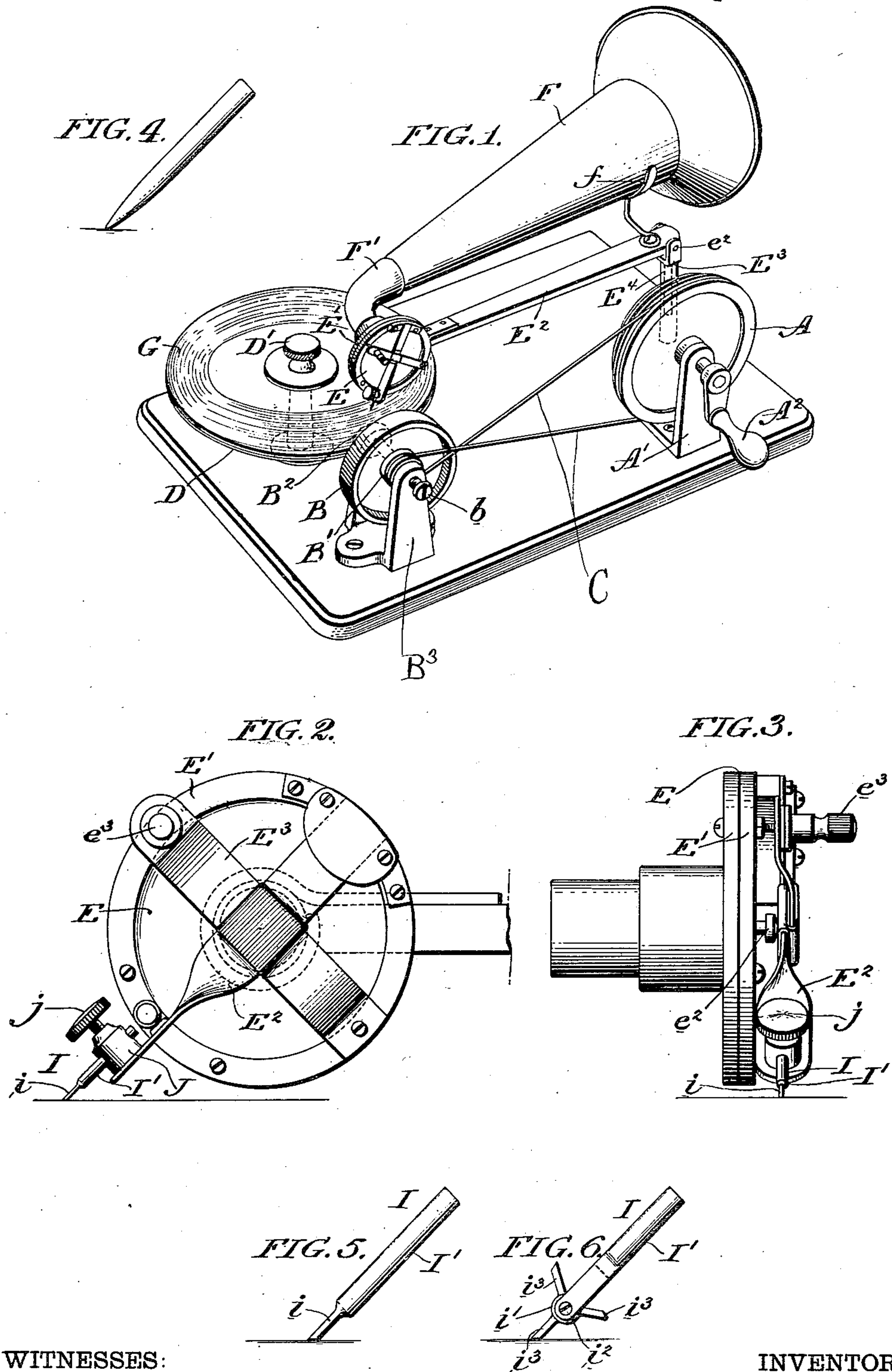


(No Model.)

J. W. JONES.  
GRAMOPHONE NEEDLE.

No. 602,453.

Patented Apr. 19, 1898.



WITNESSES:

Henry Darr  
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# UNITED STATES PATENT OFFICE.

JOSEPH WILLIAM JONES, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO HIMSELF AND JOSEPH A. VINCENT, OF SAME PLACE.

## GRAMOPHONE-NEEDLE.

SPECIFICATION forming part of Letters Patent No. 602,453, dated April 19, 1898.

Application filed February 9, 1897. Serial No. 622,698. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH WILLIAM JONES, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Gramophone-Needles; and I do 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.

My invention relates to improvements in needles for gramophones, the object being to produce a needle having a point or end of reduced but uniform diameter, so that it will adjust itself as the point wears away by use to the spiral groove in the disk containing the record without changing the vibration or sound produced by the instrument.

In the accompanying drawings, Figure 1 illustrates a perspective view of a gramophone of the usual construction, showing the manner in which the stylus or needle is brought into action with the disk containing the record. Fig. 2 illustrates a detached side elevation, enlarged, of the diaphragm and casing, showing the manner of adjusting the stylus or needle to the spring-plate controlling the diaphragm. Fig. 3 is an end view of that portion of the machine shown in Fig. 2. Fig. 4 illustrates a side elevation of the stylus or needle commonly employed in gramophones. Fig. 5 represents a side elevation of a stylus or needle embodying my improvements, and Fig. 6 is a similar view showing a somewhat modified form of my invention.

Referring to the letters of reference in the accompanying drawings, A designates the driving-pulley, mounted upon a shaft, which is supported by a bracket A', the shaft and pulley being operated by a crank A<sup>2</sup>.

B is a balance-wheel provided with a grooved hub B' for the reception of the elastic cord C, and B<sup>2</sup> is a friction-wheel which bears upon the under side of the disk D for the purpose of rotating the same. The balance-wheel B and friction-wheel B<sup>2</sup> are mounted upon a shaft supported by the bracket B<sup>3</sup>.

The latter is provided with a set-screw b for adjusting the shaft.

The diaphragm E and its casing E' are

mounted upon a bar E<sup>2</sup>, hinged at a point e<sup>2</sup> to a bracket E<sup>3</sup>, which is pivotally mounted in an upright E<sup>4</sup>, so that a universal movement is given to the said bar.

The horn F is supported at one end from the bracket E<sup>2</sup> by a rest f and at the opposite end by an elbow F', connected to the diaphragm-casing. Upon the support D is detachably secured, by means of a screw-cap D', a disk G, preferably formed of rubber, containing the record in the form of an irregular helical groove or channel, which is traversed by the stylus or needle I as the disk rotates.

The diaphragm E is acted upon by a spring-arm E<sup>2</sup> through the medium of a pin e<sup>2</sup>, and a plate-spring E<sup>3</sup> bears upon the said arm, the tension imparted thereto being regulated by a thumb-nut e<sup>3</sup>. The end of the arm E<sup>2</sup> is provided with a binding-post J, adapted to receive the stylus or needle I, which is firmly held in the binding-post J by a screw j.

I find in practice that after the needle has passed over the record several times the point is worn away, and where an ordinary needle is employed, such as I have illustrated in Fig. 4, the worn point presents a greater surface to the spiral groove in the record and the sound-vibrations become low and indistinct, so that in order to produce the proper volume and quality of sound the worn needle must be removed after several reproductions of the record and a new one substituted, which requires the operator to keep a supply of pointed needles constantly on hand.

In carrying out my invention I provide a needle I with a stout shank I', which is essential in preventing the absorption of the delicate vibrations in passing from the point of the needle to the diaphragm, and a point i, having a uniform diameter approximately the width of the spiral groove in the record. The extreme end, which is brought in contact with said groove, is beveled at the required angle, so that as the needle is worn away the same amount of surface traverses the record and the sound waves or vibrations are rendered clear and distinct and the same volume and quality of tone is preserved.

In the modified form of my invention, shown in Fig. 6 the same general principle is carried out; but in order to impart to



the needle-point a still greater working capacity I provide the shank I' with a hub i', which is fastened to the shank by a screw i<sup>3</sup>. Upon said hub are arranged a number of  
5 points i<sup>3</sup>, so that as one of the points becomes worn a new point may be brought into action by turning the hub i' without removing the shank of the needle from the binding-post.

10 Having now described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A gramophone-needle having its working end reduced, said end being of the same  
15 diameter throughout its length, the same being adapted to the groove of the record.

2. A gramophone-needle having its working end reduced, said end being of the same diameter throughout its length and beveled

at the point, the same being adapted to the 20 groove of the record.

3. A gramophone - needle comprising a shank having one or more reduced ends of the same diameter throughout their length, the same being adapted to the groove of the 25 record.

4. A gramophone - needle comprising a shank, I', a hub, i', pivotally secured thereto, provided with a plurality of points, said points being of the same diameter throughout 30 their length the same being adapted to the groove of the record.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH WILLIAM JONES.

Witnesses:

J. A. VINCENT,

WILLIAM C. STOEVEER.