May 29, 1923. 1,456,687

T. A. EDISON

STYLUS MOUNTING

Filed Dec. 11, 1919

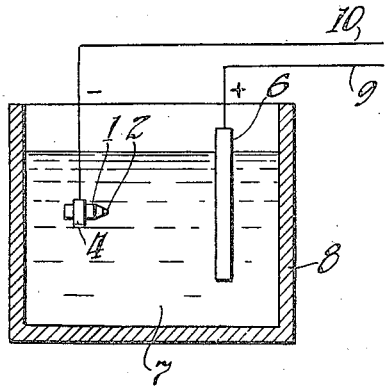

Fig. 1

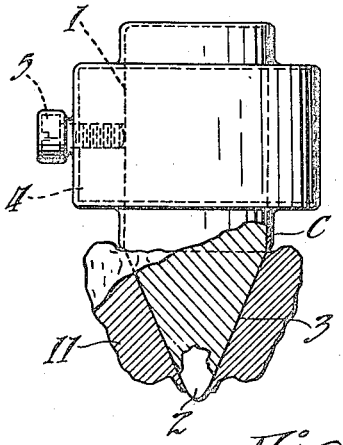

Fig. 2

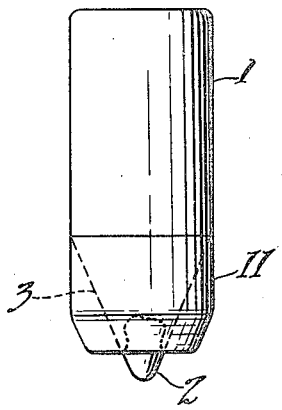

Fig. 3

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Patented May 29, 1923. 1,456,687

UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF LLEWELLYN PARK, WEST ORANGE, NEW JERSEY, ASSIGNOR TO NEW JERSEY PATENT COMPANY, OF WEST ORANGE, NEW JERSEY, A CORPORATION OF NEW JERSEY.

STYLUS MOUNTING.

Application filed December 11, 1919. Serial No. 344,092.

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, a citizen of the United States, and a resident of Llewellyn Park, in the town of West Orange, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Stylus Mountings (Case A), of which the following is a description.

My invention relates to stylus mountings and more especially to mountings for phonographic styli formed of a jewel, such as diamond or sapphire, and in which the stylus is partially enclosed in a metal holder and projects from a reduced end portion thereof.

The principal object of the invention is to provide an improved mounting of this character whereby the stylus will be firmly and rigidly held in its holder so as to effectually prevent the same from being loosened in use.

My invention also resides in the method of reinforcing stylus mountings in order to attain the foregoing object.

More specifically described, my invention consists in applying reinforcing means to the stylus holder at its weakest point, that is, where the jewel or stylus emerges or projects therefrom, such reinforcing means preferably being in the form of a collar applied to the reduced end portion of the holder just above the projecting portion of the stylus so as to grip said reduced end portion under tension.

Other objects and features of my invention will be hereinafter more specifically described and claimed.

In order that my invention may be more clearly understood, attention is directed to the drawing accompanying and forming a part of this specification, and in which:

Figure 1 is a diagrammatic view partly in elevation and partly in section, of an electro-plating cell illustrating the preferred method of applying a reinforcing collar to a stylus mounting in accordance with my invention;

Fig. 2 is an enlarged view in elevation, partly in section, of a stylus mounting in a suitable support therefor, after the reinforcing collar has been electro-plated on the reduced end portion of the holder of the mounting; and

Fig. 3 is an enlarged view in side elevation of a finished reinforced stylus mounting embodying my invention.

Referring to the drawing, reference character 1 represents the cylindrical metal holder of an ordinary form of stylus mounting, and 2 a stylus formed of diamond or other jewel, which is substantially enclosed in the holder and projects from one end thereof. The end portion of the holder 1 in which the stylus is embedded and from which it projects, is reduced, preferably being tapered down to the projecting end portion of the stylus 2. As shown herein, the reduced end portion of the holder 1 and the projecting portion of the stylus 2 are formed into a cone portion having a common conical surface, that is, a continuous conical surface formed partly on the projecting portion of the stylus and partly on the adjacent end portion of the holder. The end of the stylus is rounded, as shown, preferably on an arc having a diameter of about .006″ to fit the groove of a phonograph record. It will be apparent that that portion of the holder 1 surrounding the embedded portion of the stylus 2 will be quite thin and weak. In some instances, the diamond splint or piece of any other jewel from which the stylus is formed, is of such shape that this portion of the holder is almost paper-like in thickness. Accordingly it will be apparent that in stylus mountings of the character described, as now made, the styli are often apt to become loose and drop out of their holders when subjected to continued use. I have discovered that this objection may be practically obviated by applying suitable reinforcing means to the reduced end portion of the holder, preferably in the form of a collar embracing and gripping the same under tension so that said collar will be permanently held on such reduced end portion by gripping engagement therewith.

While this reinforcing collar may be formed of various materials and applied to the reduced end portion of the holder in various ways. I prefer to employ a collar separate or distinct from the holder and preferably of nickel, and to form the collar in situ on the holder preferably by the electro-deposition of nickel thereon in a suitable nickel plating cell. In applying such a nickel collar to the holder, I first secure the mounting in a suitable support 4 by fastening the

cylindrical portion or shank of the holder 1 therein, as by means of a set screw 5. All the exposed surface portions of the stylus mounting and the support 4, with the exception of the reduced conical end portion 3 of the holder 1 and the stylus, are then covered with a coating C of a suitable insulating material, preferably a varnish comprising a solution of a coumarone or para coumarone resin such as disclosed in my pending application Serial No. 327,323 filed September 29, 1919 and entitled Protecting varnishes for electrodes of electrolytic cells, which application has matured into Patent No. 1,364,359, dated January 4, 1921. The stylus mounting in the support 4 is then opposed as a cathode to a nickel anode 6 in the electrolyte 7 of a nickel-plating cell 8. A current of suitable density is then passed through the cell by means of conductors 9 and 10 leading from a suitable source (not shown) and respectively connected to the anode 6 and the cathode consisting of the stylus mounting and its support. A ring or collar 11 of nickel will thus be formed in situ on the reduced end portion 3 of the holder by being electro-plated thereon. While the stylus 2 is a non-conductor, the nickel deposited on the reduced end portion 3 of the holder 1 will, in the continued operation of the cell, build up on itself so as to cover a large part of the projecting end portion of the stylus, as shown in Fig. 2. After a ring or collar of the desired thickness has been plated on the reduced end portion of the holder 1, the stylus mounting is removed from the support 4, and the collar is ground down to conform to the cylindrical body portion of the holder 1. The lower portion of this collar 11 is then ground to the shape shown in Fig. 3, and the surplus metal at the end of the collar is removed by a suitable abrasive so as to bare that portion of the stylus 2 which projects from the holder 1.

It is well known that nickel is electro-deposited under great tension. Accordingly the reinforcing collar formed as described herein will grip the reduced end portion 3 of the holder under great tension so as to be permanently held thereon, and the pressure exerted thereby will hold the stylus so firmly in the holder that the stylus will break by side thrust or pressure before it will loosen in the holder.

While I have described the preferred form of reinforced stylus mounting in accordance with my invention, and the preferred method of applying the reinforcing means thereto, it is to be understood that the same are subject to many changes and modifications without departure from the spirit of the invention and the scope of the appended claims.

Having now fully described my invention, what I claim as new and desire to protect by Letters Patent, is as follows:

1. A stylus mounting comprising a holder, a stylus partially embedded in said holder and extending therefrom, and a collar distinct from said holder, embracing the portion of the holder in which the stylus is embedded and formed in situ thereon, substantially as described.

2. A stylus mounting comprising a holder having a reduced end portion, a stylus partially embedded in said holder and extending from the end of said portion, and a reinforcing collar electro-plated on said end portion, substantially as described.

3. A stylus mounting comprising a holder having a reduced end portion, a stylus partially embedded in said holder and extending from the end of said portion, and a reinforcing collar of nickel electro-plated on said end portion, substantially as described.

4. A stylus mounting comprising a holder having a conical end portion, a stylus partially embedded in said holder and extending from the end of said portion, and a collar distinct from said holder embracing said conical end portion and formed in situ thereon, substantially as described.

5. A stylus mounting comprising a holder, a stylus partially enclosed in the holder and projecting from one end thereof, the projecting end portion of the stylus and the adjacent end portion of the holder being formed into a tapered portion having a continuous taper formed partly on the holder and partly on the stylus, and a reinforcing collar embracing the tapered end portion of the holder and formed in situ thereon, the projecting end portion of the stylus extending below said collar, substantially as described.

6. The method of reinforcing a stylus mounting comprising a holder and a stylus partially enclosed in the holder and projecting therefrom, which consists in forming in situ on the portion of the holder in which the stylus is enclosed a reinforcing collar distinct from the holder, substantially as described.

7. The method of reinforcing a stylus mounting comprising a holder having a reduced end portion and a stylus partially enclosed in the holder and projecting from the end of said portion, which consists in electro-plating a collar on the reduced end portion of the holder, substantially as described.

8. The method of reinforcing a stylus mounting comprising a holder having a reduced end portion and a stylus partially enclosed in the holder and projecting from the end of said portion, which consists in electro-plating a nickel collar on the reduced end portion of the holder, and removing the surplus metal of said collar by an abrasive, substantially as described.

9. The method of reinforcing a stylus

mounting comprising a holder having a reduced end portion and a stylus partially enclosed in the holder and projecting from the end of said portion, which consists in placing the stylus mounting in a support, covering the exposed surfaces of the support and stylus mounting with the exception of the reduced end portion of said holder and the stylus with insulating material, subjecting the support with the stylus mounting therein to the action of an electro-plating bath whereby a collar will be electro-plated on the reduced end portion of said holder, and removing the surplus metal from said collar and stylus so that the stylus will project from said collar, substantially as described.

10. A stylus mounting comprising a holder, a stylus partially embedded in the holder and projecting therefrom, and a reinforcing collar electro-plated on said holder about the portion thereof in which the stylus is embedded, substantially as described.

11. The method of reinforcing a stylus mounting comprising a holder having a stylus partially enclosed in the holder and projecting therefrom, which consists in electro-plating a collar on the portion of the holder in which the stylus is enclosed, substantially as described.

This specification signed and witnessed this 9th day of December 1919.

THOS. A. EDISON.