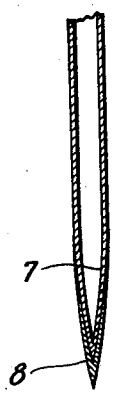
Feb. 17, 1931. H. C. HARRISON ET AL 1,792,494

PHONOGRAPHIC NEEDLE

Filed April 30, 1926

Fig. 1.

Fig. 2



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Patented Feb. 17, 1931

1,792,494

UNITED STATES PATENT OFFICE

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PHONOGRAPHIC NEEDLE

Application filed April 30, 1926. Serial No. 105,637.

This invention relates to phonograph needles and has as its object a needle which will reproduce faithfully, without injury to the record, will be light in weight and have a shell of extreme hardness which will prolong its life.

The ordinary phonograph needle is a pointed steel rod of small diameter, the point being sufficiently fine to permit it to follow the groove in the record. These needles are generally used but once and are then discarded. A second type of needle, which is used quite extensively is known as the "tungsten wire" needle. This type is an improvement over the steel needle, in that it may be used for a number of records before it is necessary to discard it.

In accordance with this invention a hard, close grained, ductile metal is plated on a base, having the needle shape desired. One metal that serves this purpose very satisfactorily is chromium.

The plating is done preferably by electrolytically depositing chromium or similar metal on a body of metal by any approved method, one of such methods being described in Patent No. 1,496,845 to George Grube, June 10, 1924.

Chromium has marked adherent qualities and although extremely hard, thin sheets or layers are ductile. A needle made of steel, copper or brass, having its tip plated with chromium, when applied to a record quickly conforms to the configuration of the groove and does not wear the record to such an extent as the ordinary steel or tungsten needle. Because of the fine grain and smoothness of the chromium coating, the amount of scratching sound when playing a record is materially reduced.

Fig. 1, of the drawing attached hereto, represents on a large scale a section of one type of needle constructed in accordance with this invention and Fig. 2 represents a hollow type of needle.

Referring to Fig. 1, the body 5 of the needle may be of steel, copper, brass or other suitable metal, on which a metal having the physical properties of chromium may be coated. The enclosing metal tip 6 is preferably electrolytically deposited chromium.

The hollow type needle of Fig. 2 consists of a shell 7 of copper, or similar metal having a coating 8 of a metal having the physical properties of chromium. Needles of this type may be made by forming wax, or similar composition material, into the form desired and then plating this wax form with copper. A thin film of chromium or similar metal is then coated on the metal base, after which the needle is subjected to a temperature high enough to melt out the wax. This provides a needle having a working surface which is very hard, but lighter in weight than the needle of Fig. 1 and therefore more efficient.

What is claimed is:

1. A phonograph needle comprising a main body portion of one metal and a film of hard, close grained, ductile metal enclosing the tip end portion of the same.

2. A phonograph needle comprising a main body of copper having its tip enclosed by a coating of ductile chromium.

3. A phonograph needle comprising a hollow body of one metal and a film of hard, close grained, ductile metal coated on the tip of said body.

4. A phonograph needle comprising a hollow body of copper and a film of chromium enclosing the tip of said body.

5. A phonograph needle comprising a main body portion of soft metal, and a film of hard close grain ductile metal enclosing the end portion of the same.

6. A reproducer needle comprising a hollow body portion of one metal provided with a closed, pointed end coated with a hard, ductile metal.

7. A reproducer needle comprising a hollow body portion of relatively soft metal provided with a closed, pointed end coated with a hard, close-grained, ductile metal.

In witness whereof, we hereunto subscribe our names this 29 day of April, A. D. 1926.

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