A. F. WILLAT.

PHONOGRAPH NEEDLE.

APPLICATION FILED MAY 21, 1919.

1,380,089. Patented May 31, 1921.

FIG 1

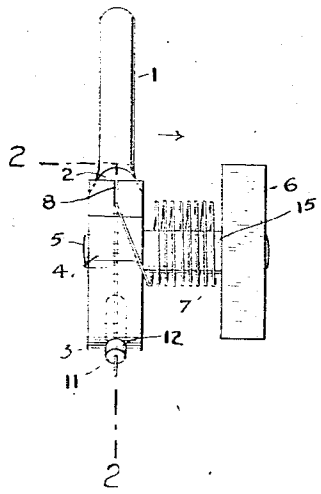
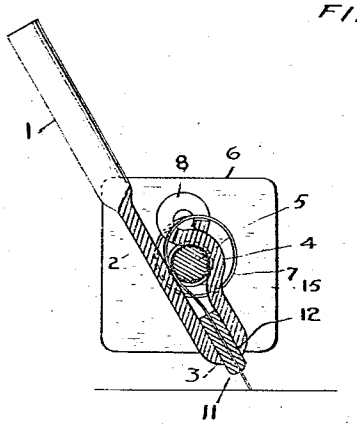


FIG. 2



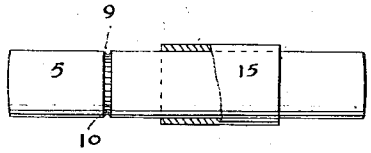


FIG. 3

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PHONOGRAPH-NEEDLE.

1,380,089. Specification of Letters Patent. Patented May 31, 1921.

Application filed May 21, 1919. Serial No. 298,771.

To all whom it may concern:

Be it known that I, ARNOLD F. WILLAT, a citizen of the United States, residing at San Rafael, in the county of Marin and State of California, have invented new and useful Improvements in Phonograph-Needles, of which the following is a specification.

One object of the present invention is to provide a needle for a talking machine which can be used on a very large number of records. Another object is to provide a needle which can be used to produce from the record loud or soft tones as desired.

In the accompanying drawing, Figure 1 is a front view of my improved needle on an enlarged scale; Fig. 2 is a vertical sectional view on the line 2—2 of Fig. 1; Fig. 3 is a detail side view on a still larger scale of a feed shaft, and a sleeve thereon, broken away.

Referring to the drawing, 1 indicates a needle proper in the form of a round rod which is attached to the reproducer, either of the phonograph or graphophone type, to take the place of the needle ordinarily used therewith. After extending down in an oblique direction from the reproducer, it is flattened, as shown at 2, and bent back on itself, as shown at 3, and the upwardly extending portion 4 of the needle is bent outward in an approximately semi-circular form, to partly surround a feed shaft 5 of very hard steel, on one end of which is secured a head 6, preferably angular to facilitate the turning of the shaft. The needle proper is made of spring material so that the upwardly extending portion 4 of the needle pushes said feed shaft 5 with spring pressure against the downwardly extending portion 2 thereof.

7 indicates a fine wire, of about .007 inch in diameter, which, for a reason that will hereinafter appear, is termed the core of the needle. It is coiled around a sleeve 15 on the feed shaft 5, and upon the length of the core depends the number of records on which it can be used. One end thereof extends through a guide slot 8 in the upper portion of the part 4 of the needle and then between the part 2 of the needle and the feed shaft 5, which is formed with a circumferentially extending groove 9, the bottom of which is knurled or formed with burs 10, and in which said core 7 is contained.

Because the spring pressure of the needle presses the core with sufficient force against the part 2 thereof, the friction between the core and the feed shaft is sufficiently great that, when the feed shaft 5 is turned, the core travels with it on the part 2. Turning the head 6 in a right-handed direction causes the core to travel downward or to be extended, and in a left-handed direction causes it to be retracted.

After passing the feed shaft, the core curves slightly upward to permit it to pass through an axial hole in a cylindrical bushing 11, which bushing is itself contained in a hole 12 in the bend 3 of the needle, the axis of the hole 12 being parallel with the part 2 of the needle. The bushing should be of some comparatively soft substance, as celluloid or fiber, which will modify the tone of the reproducer reproducing the vibrations of the needle.

The core extends outside or below said bushing to the proper distance to enable it to enter and move in a groove in the record.

When the needle has been caused to play about one hundred records, the core will have worn down to such an extent that it will play no longer, or imperfectly. It is then again necessary to extend the core from the bushing 11, which is done by turning the feed shaft in a right-handed direction. This operation is repeated whenever necessary. I estimate that with a core six inches in length, not less than ten thousand records can be played.

A further advantage of my invention resides in its adjustability for playing loud or soft, as desired. To play soft, the core is extended, in which case, on account of the greater length of the core free to bend, the working part of the core is more flexible and a softer tone is produced. When it is desired to play loud, the core is retracted and the working portion of it is, therefore, stiffer, producing a louder tone.

I claim:—

1. A talking machine needle having a coiled operating core and a shank adapted to

fit the needle holder of a phonograph reproducer.

2. A phonograph needle comprising a body member, having one end adapted to be inserted in the needle holder of a phonograph, and having an opening extending therethrough at its lower end, a length of fine wire having one end inserted through said opening and a member of the body for advancing the wire through said opening, said wire being coiled around the last named member.

ARNOLD F. WILLAT.