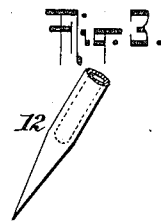
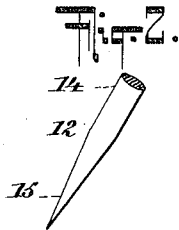
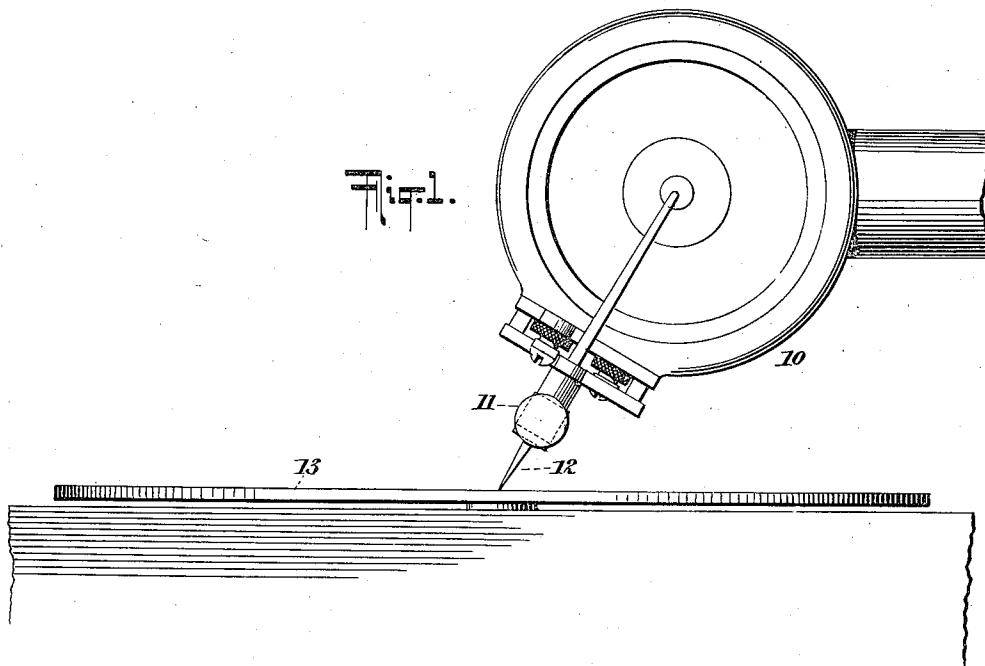


C. H. NORTON.  
SOUND REPRODUCING MACHINE.  
APPLICATION FILED JUNE 24, 1908.

950,024.

Patented Feb. 22, 1910.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

CHARLES H. NORTON, OF NEW YORK, N. Y.

SOUND-REPRODUCING MACHINE.

950,024.

Specification of Letters Patent. Patented Feb. 22, 1910.

Application filed June 24, 1908. Serial No. 440,064.

To all whom it may concern:

Be it known that I, CHARLES H. NORTON, a citizen of the United States, and a resident of New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Sound-Reproducing Machines, of which the following is a specification.

The invention relates to improvements in sound-reproducing machines, and it consists in the novel needle or stylus hereinafter described and claimed for use in such machines.

It is well known that the metal needles commonly employed in sound-reproducing machines possess inherent defects in that they wear on the records, create a scratching noise which interferes with the proper reproduction of the sounds and lack the capability, in large measure, of reproducing sounds in soft, distinct, modulated tones. It is also well known that various attempts have been made to improve the needles and to remedy some of the objections to them by the use of materials other than metal in their construction. In the use of materials other than metal in the construction of the needles various other objections developed both in difficulties of manufacture and increased expense to the owners of sound-reproducing machines and otherwise.

The object of my invention is to produce a needle or stylus for sound-reproducing machines which may be supplied at slight expense and which in use will eliminate the scratching noise caused by metal needles, reduce to a minimum the wear on the records and materially improve the tone and distinctness of the instrument, the sounds being soft or modulated and those representing various voices or instruments being clearly differentiated one from the other.

I have discovered that by making the needle or stylus of hard or vulcanized rubber, I secure a very great improvement in the general tone of the instrument and more distinct, accurate and natural reproductions of the sounds, and in addition obviate any rapid wearing out of the records or excessive expense for needles. The needle or stylus of my invention is, therefore, intended for use in machines employing disk-records and

is formed of hard rubber. The needle may be either solid or hollow above its point, and I prefer the hollow hard rubber needle in respect of its efficiency and tone-qualities.

My invention is illustrated in the accompanying drawings, in which:

Figure 1 is an elevation of a portion of a sound-reproducing machine equipped with a hard or vulcanized rubber needle of my invention applied to the ordinary disk-record employed in such machines; Fig. 2 is a perspective view, on an enlarged scale, of the needle, and Fig. 3 is a like view of the same needle shown as hollow above its pointed lower end portion.

In the drawings, 10 designates the reproducer-head of a sound-reproducing machine of known construction, 11 the usual needle or stylus-holder thereof, 12 the needle or stylus, and 13 a rotary disk-record.

My invention pertains to the needle or stylus 12 which comprises a shank-portion 14 adapted to the holder 11 and a pointed lower end portion 15 to engage the record 13. The needle or stylus 12 of my invention is made of hard or vulcanized rubber, and preferably this needle is hollow above its lower pointed portion, although it may be solid throughout.

The needle 12 of hard or vulcanized rubber possesses the property, in connection with the record and machine, of reproducing the sounds in especially distinct and natural tones, without harshness and without undue wear on the records. The hard or vulcanized rubber needle of my invention lacks fibrous and gritty substances and is somewhat yielding or capable of flexion or spring action at its lower end, all of which not only improves its tone reproducing-qualities but lessens the wear on the records, which is a matter of considerable importance.

The general results accomplished by my invention are that the tone-quality of the instrument is greatly improved, that the needles may be supplied at small expense and that the life of the records, due to the reduction in wear by the needles, is materially increased. The absence of fibrous and gritty matters in the needle and its formation of hard rubber enables its efficient use in accurately and delicately following the

sinuous convolutions of the groove in the record, without danger of leaving the same or of excessive wear on the record.

What I claim as my invention and desire to secure by Letters-Patent, is:

1. A sound reproducing machine comprising a head, a disk-record and a needle of hard rubber for coaction therewith.
2. A sound reproducing machine comprising a head, a disk-record and a needle of

hard rubber for coaction therewith, said needle above its lower pointed portion being hollow.

Signed at New York city, in the county of New York, and State of New York, this 23rd day of June A. D. 1908.

CHARLES H. NORTON.

Witnesses:

ROBT. J. KEEGAN,  
E. C. BOEHME.