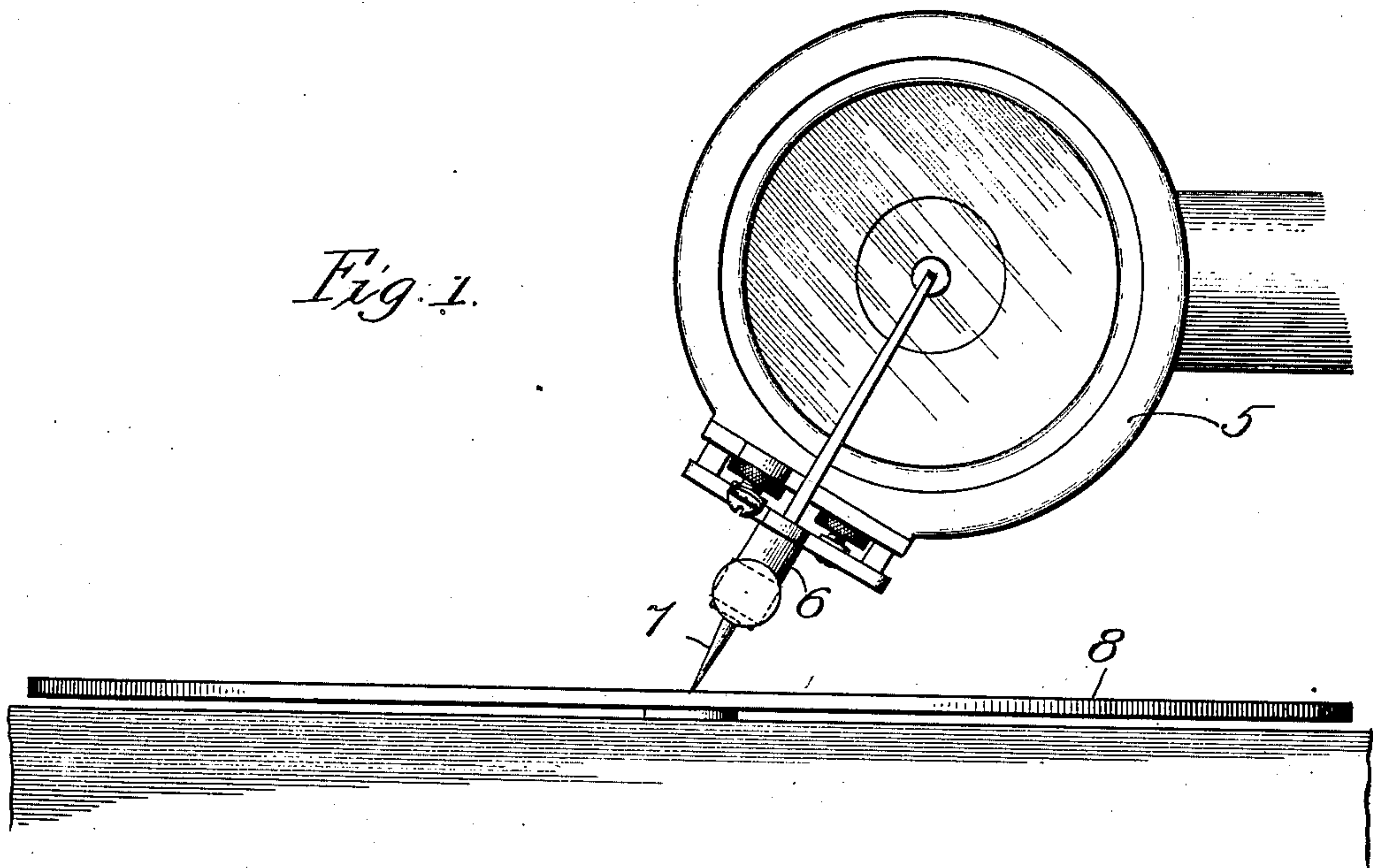


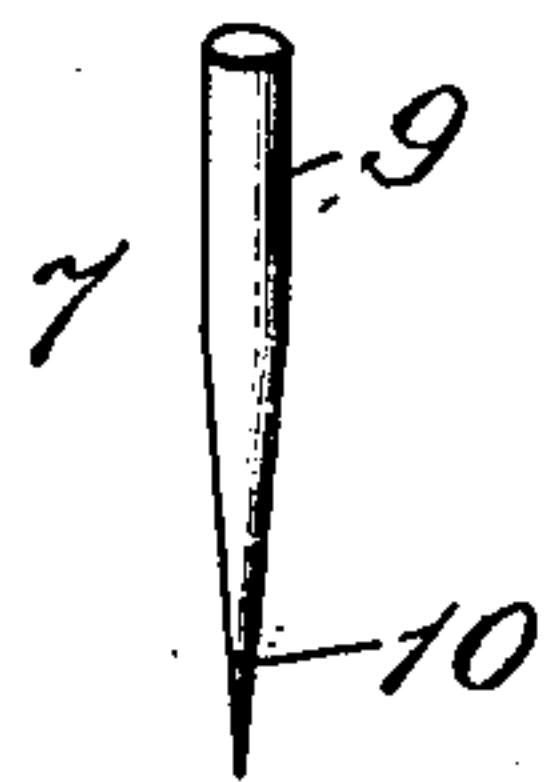
No. 884,062.

PATENTED APR. 7, 1908.

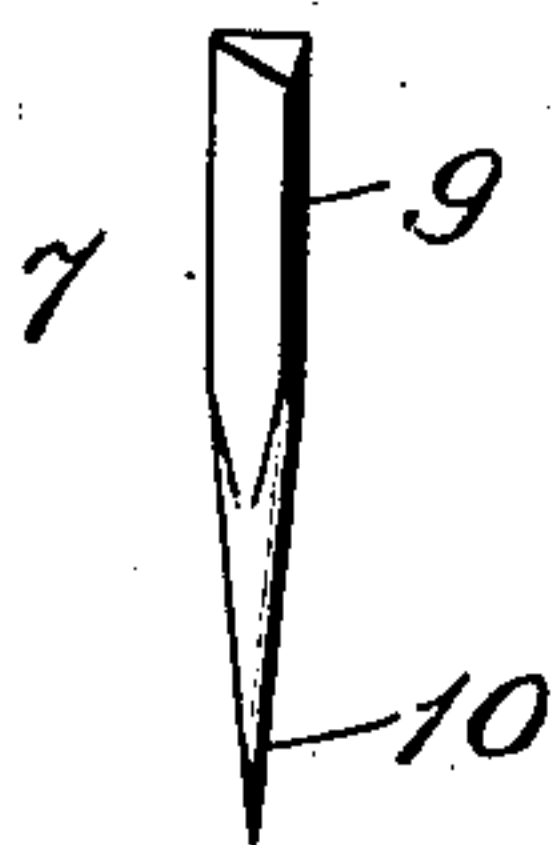
H. BALDWIN.  
PHONOGRAPH REPRODUCER.  
APPLICATION FILED DEC. 6, 1907.



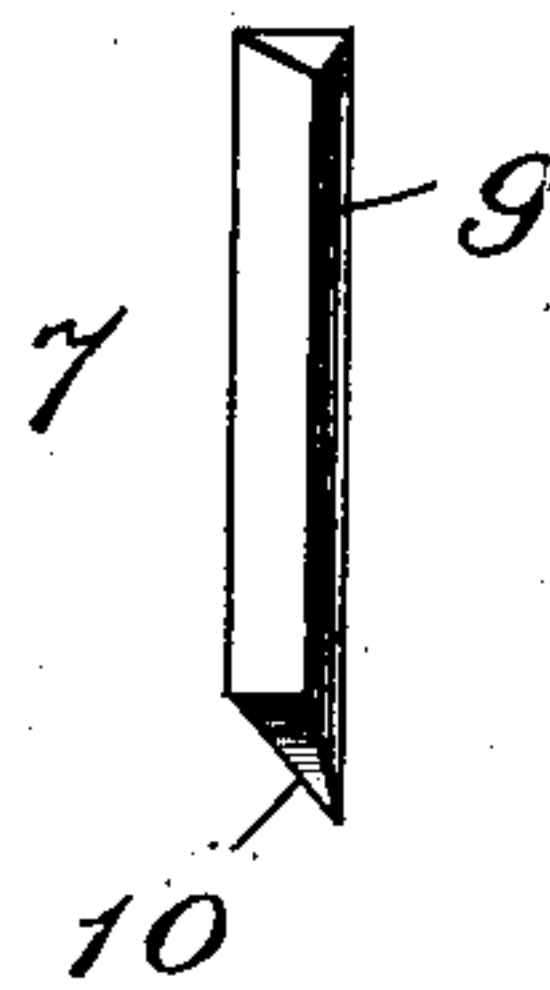
*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



*Witnesses:*

*E. C. Gaylord.*

*John Eiders*

*Inventor:*

*Hiram Baldwin.*

*By Dyrenforth, Lee, Chritton & Miles.*

*Attys.*

# UNITED STATES PATENT OFFICE.

HIRAM BALDWIN, OF CHICAGO, ILLINOIS.

## PHONOGRAPH-REPRODUCER.

No. 884,062.

Specification of Letters Patent.

Patented April 7, 1908.

Application filed December 6, 1907. Serial No. 405,312.

*To all whom it may concern.*

Be it known that I, HIRAM BALDWIN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Phonograph-Reproducers, of which the following is a specification.

The object of my invention is to provide a novel needle or stylus as the sound-reproducer of a phonograph or analogous instrument, which shall possess, as attributes, tone-improving qualities in the way of softness and freedom from noise from its contact with the record, and good sound-conductivity.

I have discovered that ivory is a substance affording in a high degree these attributes in the needle or stylus of a phonograph; and my invention, based on this discovery, consists in a reproducer-needle composed, as to its entirety or at least as to its attenuated portion, of ivory.

In the accompanying drawing, Figure 1 is a broken view showing a reproducer-head equipped with my improved needle applied to the ordinary disk-record of a phonograph; and Figs. 2, 3 and 4 are perspective views representing three of the various forms in which my improved needle may be provided.

The numeral 5 represents a reproducer-head of ordinary construction, involving a holder 6 for adjustably supporting a stylus 7 in operative position relative to a rotary disk-record 8. The stylus or needle consists of a stem-portion 9 and an attenuated portion 10 formed, preferably in its entirety, of ivory, in suitable shape, including the shapes represented; though it is within my inven-

tion to form only the attenuated portion of ivory. Furthermore I find it to be advantageous, as enhancing the attributes hereinbefore specified, to artificially harden the ivory of the stylus, particularly as to its attenuated portion, and this I have done by immersing it, for a brief period—say of an hour, more or less—in a saturated solution of chromic acid, though chromate of potash will serve the purpose, and thereupon drying the ivory.

What I claim as new and desire to secure by Letters Patent is:

1. The combination in a phonograph, with a reproducer-head, of a needle having its attenuated record-engaging portion composed of ivory.

2. The combination in a phonograph, with a reproducer-head, of a needle having its attenuated record-engaging portion composed of artificially-hardened ivory.

3. The combination in a phonograph, with a reproducer-head, of a needle consisting of a stem-portion at which it is supported on said head, and an attenuated record-engaging portion, said needle being composed in its entirety of ivory.

4. The combination in a phonograph, with a reproducer-head, of a needle consisting of a stem-portion at which it is supported on said head, and an attenuated record-engaging portion, said needle being composed in its entirety of artificially-hardened ivory.

HIRAM BALDWIN.

In presence of:

W. T. JONES,  
RALPH SCHAEFER.