

(No Model.)

T. A. EDISON.  
PHONOGRAM BLANK.

No. 414,759.

Patented Nov. 12, 1889.

FIG. 1.

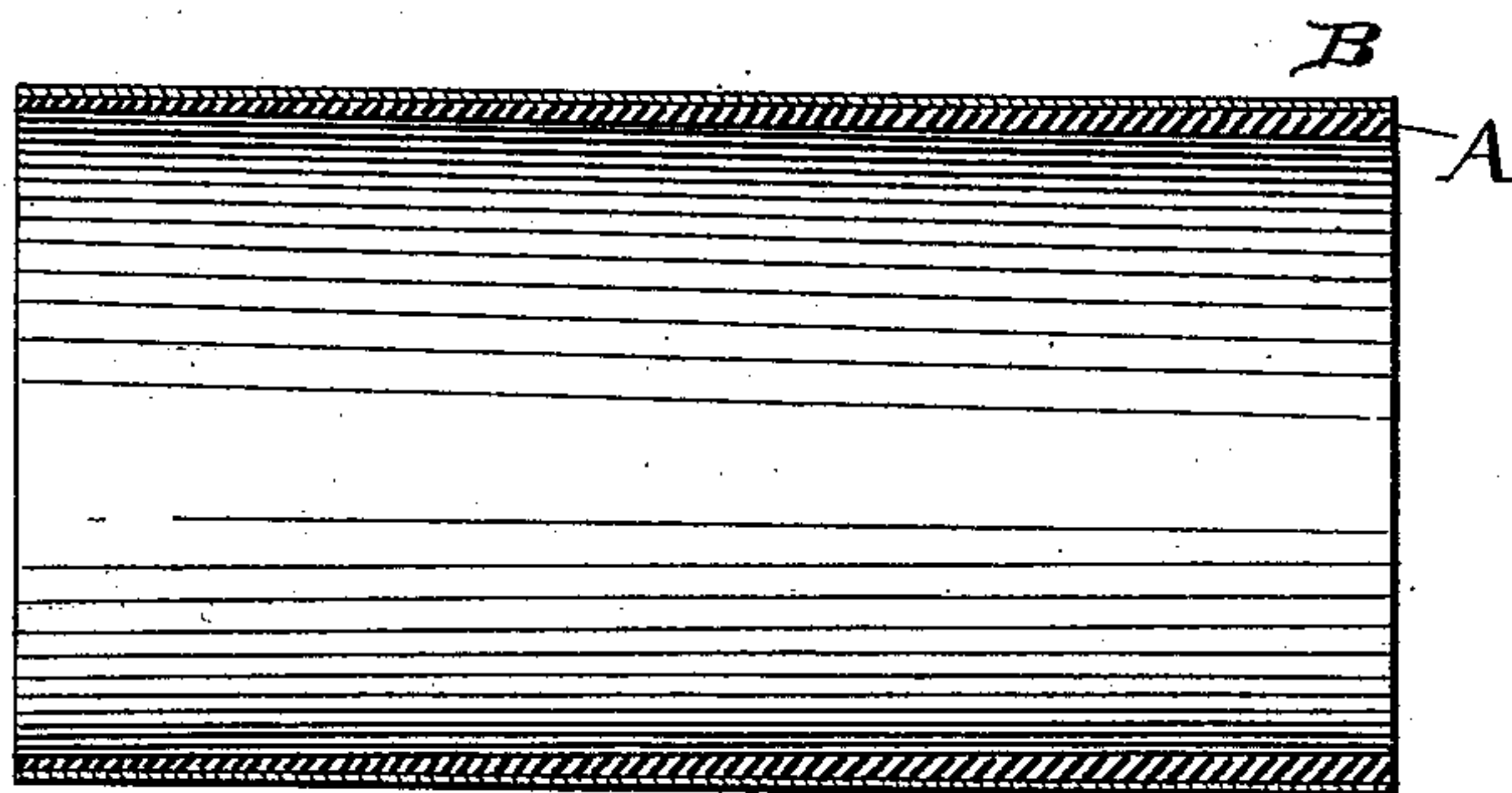
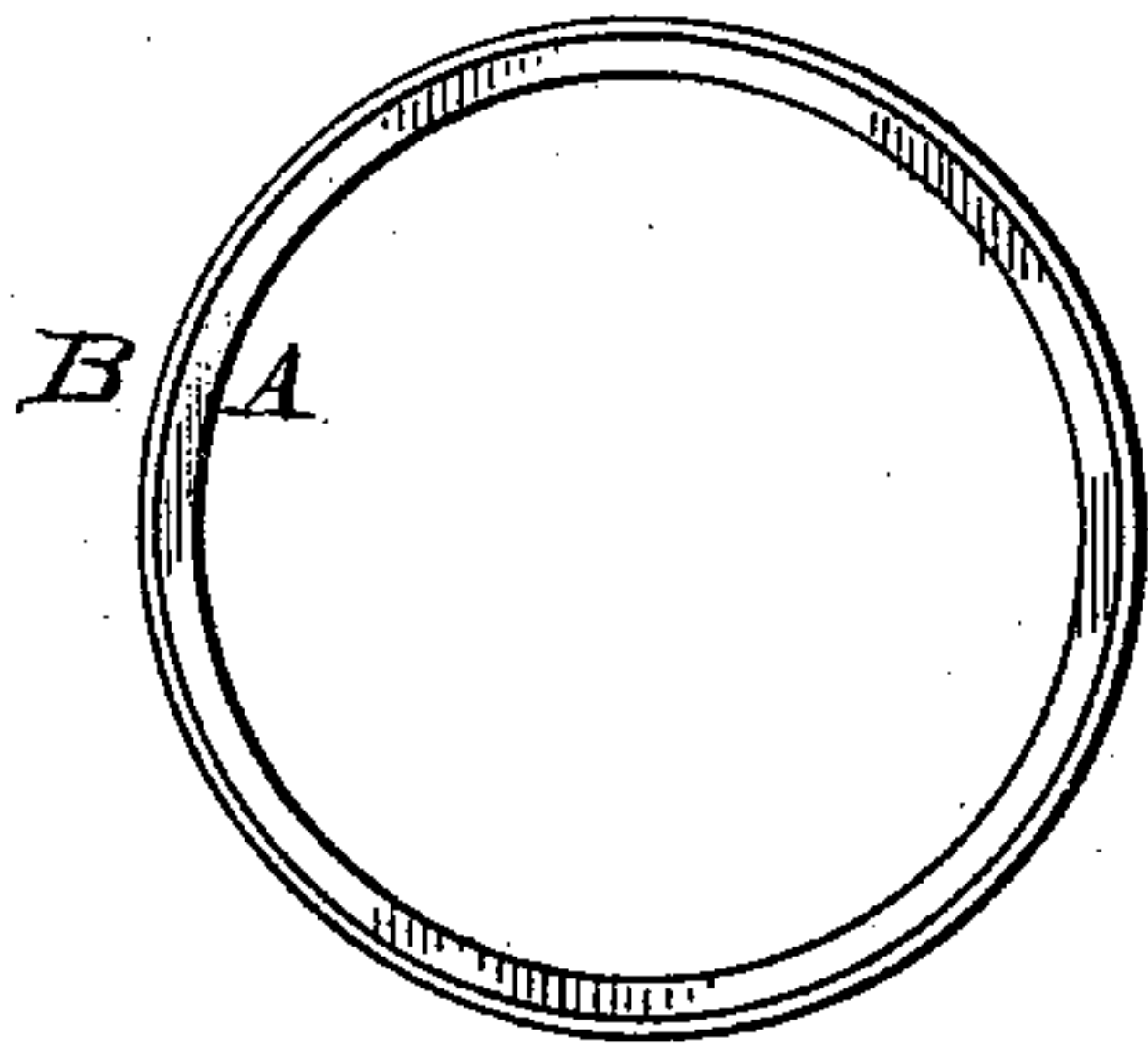


FIG. 2.



WITNESSES:

*E. C. Roland*  
*W. P. Elzer*

INVENTOR

*Thomas A. Edison*

BY

*John H. Mears*

ATTORNEYS

# UNITED STATES PATENT OFFICE.

THOMAS ALVA EDISON, OF LLEWELLYN PARK, NEW JERSEY.

## PHONOGRAM-BLANK.

SPECIFICATION forming part of Letters Patent No. 414,759, dated November 12, 1889.

Application filed March 25, 1889. Serial No. 304,716. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS ALVA EDISON, of Llewellyn Park, in the county of Essex and State of New Jersey, have invented a certain new and useful Improvement in Phonogram-Blanks, (Case No. 830,) of which the following is a specification.

My invention relates to that character of phonogram-blanks which consist of a base or backing of one material, usually a molded material, and an outer surface or covering of another material, which receives the sound-record.

In my application, Serial No. 300,514, filed February 16, 1889, I have described a phonogram-blank of the character just referred to, which is designed to obviate some of the defects existing in other phonogram-blanks. In said application this is accomplished by combining with the core or backing of the blank a recording-surface having the same or practically the same coefficient of expansion as the core or backing. Asphalts or bitumens for the core or backing and a coating of metallic soap for the recording-surface are described as the preferable materials to produce the phonogram-blank of said application.

One object of my present invention is to produce a strong, light, and economical core or backing for phonogram-blanks, over the surface of which a thin coating of material to be recorded is placed. This part of my invention consists in the use for the phonogram core or backing of hard rubber or ebonite, consisting of rubber or allied gums combined with sulphur by heat. This core or backing is coated with a thin surface of a sound-recording material, and the blank thereby produced possesses great strength, is light and economical, and is capable of withstanding rough usage; hence musical or other phonographic records or duplicates made on it may be handled or shipped without danger of breaking.

Another object of my invention is to provide the core or backing just referred to, which possesses great strength and abnormal expansion, with a material which shall have the same or substantially the same coefficient of expansion. I have found that the stearates

of the metals possess practically the same coefficient of expansion as hard rubber or ebonite, and I propose to combine a stearate of a metal with a core or backing of hard rubber or ebonite to accomplish the object of this part of my invention.

A third object of my invention is to equalize any variation in the coefficients of expansion of hard rubber or ebonite and the stearates of the metals. This variation is likely to occur when different makes of hard rubber or ebonite are used, as this material when made by different manufacturers may have different coefficients of expansion. This I accomplish by combining with the stearate of a metal an oleate of a metal, by the use of more or less of which the coefficient of expansion of the stearate may be increased or diminished to correspond with the coefficient of expansion of the particular compound of hard rubber or ebonite used.

I prefer the phonogram-blank to be of the shape of a hollow cylinder with a tapering bore and a true cylindrical outer surface. The backing or core for the blank may be made in any suitable manner or by molding singly in the usual manner of making vulcanized india-rubber articles; or a hollow cylinder of the hard rubber or vulcanite may be made of length equal to a number of phonogram-blanks and subsequently cut to size and finished to form. The outer surface of the hard rubber or ebonite should be made rough to cause adherence of the recording-surface to be applied to it. The outer coating, which is preferably a material having the same or substantially the same coefficient of expansion as a stearate of a metal, but which may be of any other suitable sound-recording material, is preferably applied by dipping the cylinder into a bath of the melted material. When it is applied in this way, the surface may afterward be made true by turning it off in a suitable lathe after it has become cooled again. Instead of this, however, the external material may be applied by molding, the cylinder being placed in a mold which is slightly larger than the cylinder and the covering material poured into such mold around the cylinder, so that it will adhere thereto and will form a smooth and true surface without the neces-



sity of turning it off. My experience has been, however, that the first-mentioned method is the less expensive.

When necessary, as above stated, an oleate  
5 of a metal may be added to the stearate in order to alter its expansion rate, the quantity varying according to the expansion rate required. For instance, if monostearate of soda  
10 is used the expansion may be increased by adding to it a small quantity of oleate of alumina. The proportion of the stearate and oleate used must be determined experimentally to suit the particular hard rubber or ebonite used.

15 The accompanying drawings illustrate a cylindrical phonogram-blank embodying my invention.

Figure 1 is a longitudinal section of the cylinder, and Fig. 2 an end view thereof.

20 A is the inner body or core, and B the outer surface of sound-recording material.

What I claim is—

1. A phonogram-blank composed of a base

of hard rubber or ebonite and an outer covering of sound-recording material, substantially as set forth.

2. A phonogram-blank composed of a base of hard rubber or ebonite and an outer recording-surface of different materials having the same or substantially the same coefficient of expansion, substantially as set forth.

3. A phonogram-blank composed of a base of hard rubber or ebonite and an outer recording-surface of a stearate of a metal, substantially as set forth.

4. A phonogram-blank composed of a base of hard rubber or ebonite and an outer covering composed of a stearate of a metal and an oleate of a metal, substantially as set forth.

This specification signed and witnessed this 22d day of March, 1889.

THOMAS ALVA EDISON.

Witnesses:

W. PELZER,

RICHD. N. DYER.