

No. 785,316.

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PRODUCTION OF SOUND RECORDS.

APPLICATION FILED APR. 14, 1904

Fig. 1.

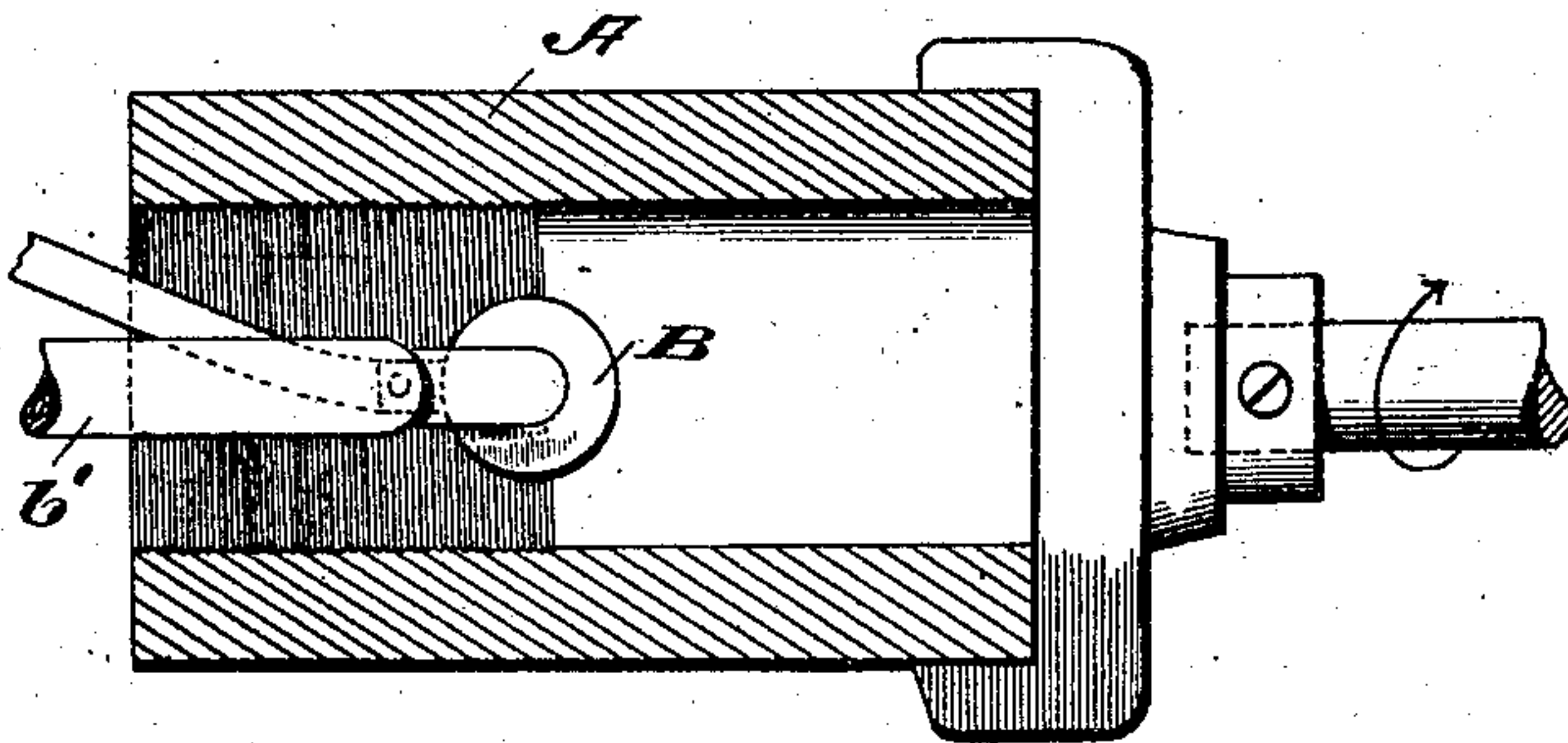


Fig. 2.

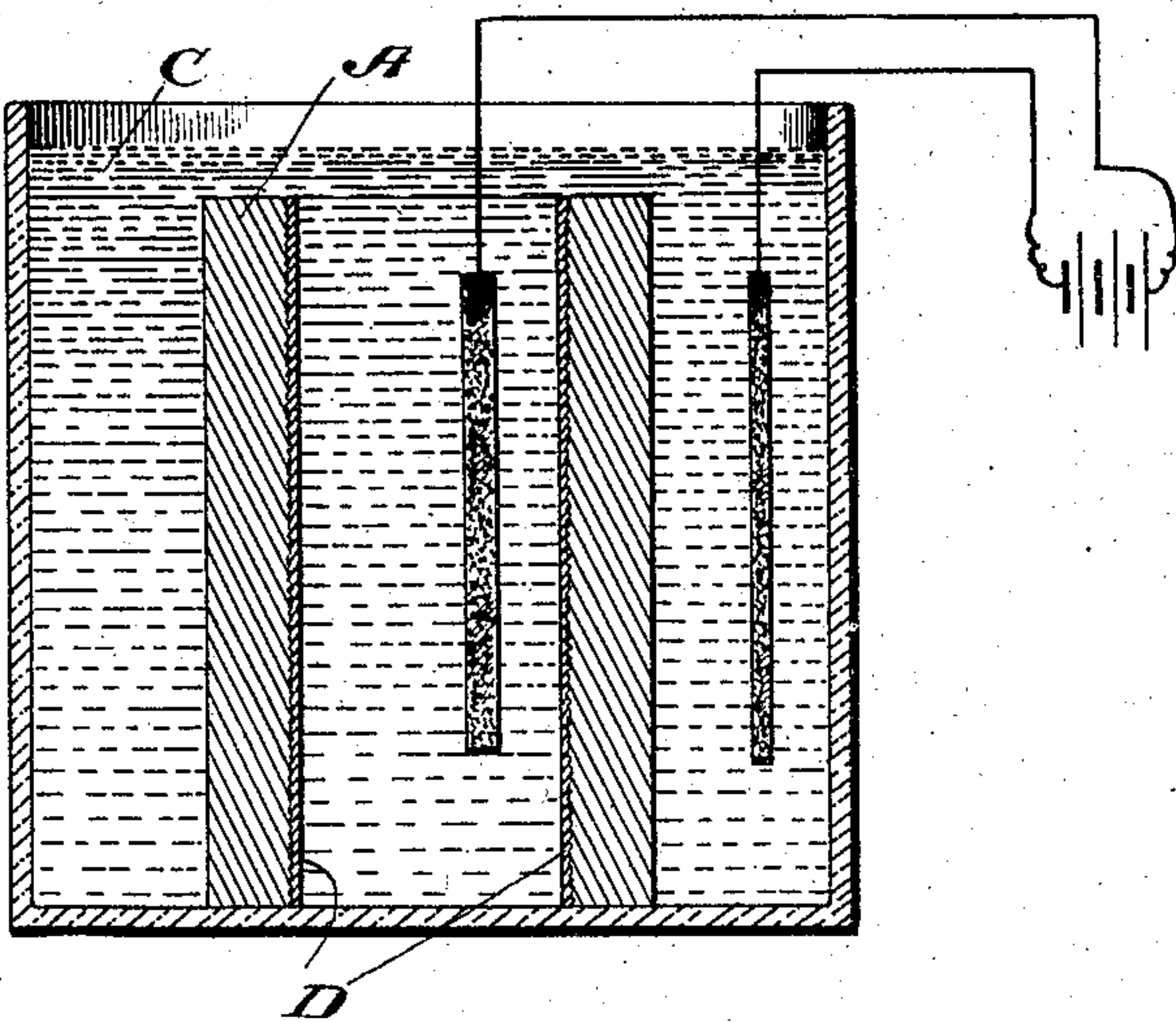


Fig. 3.

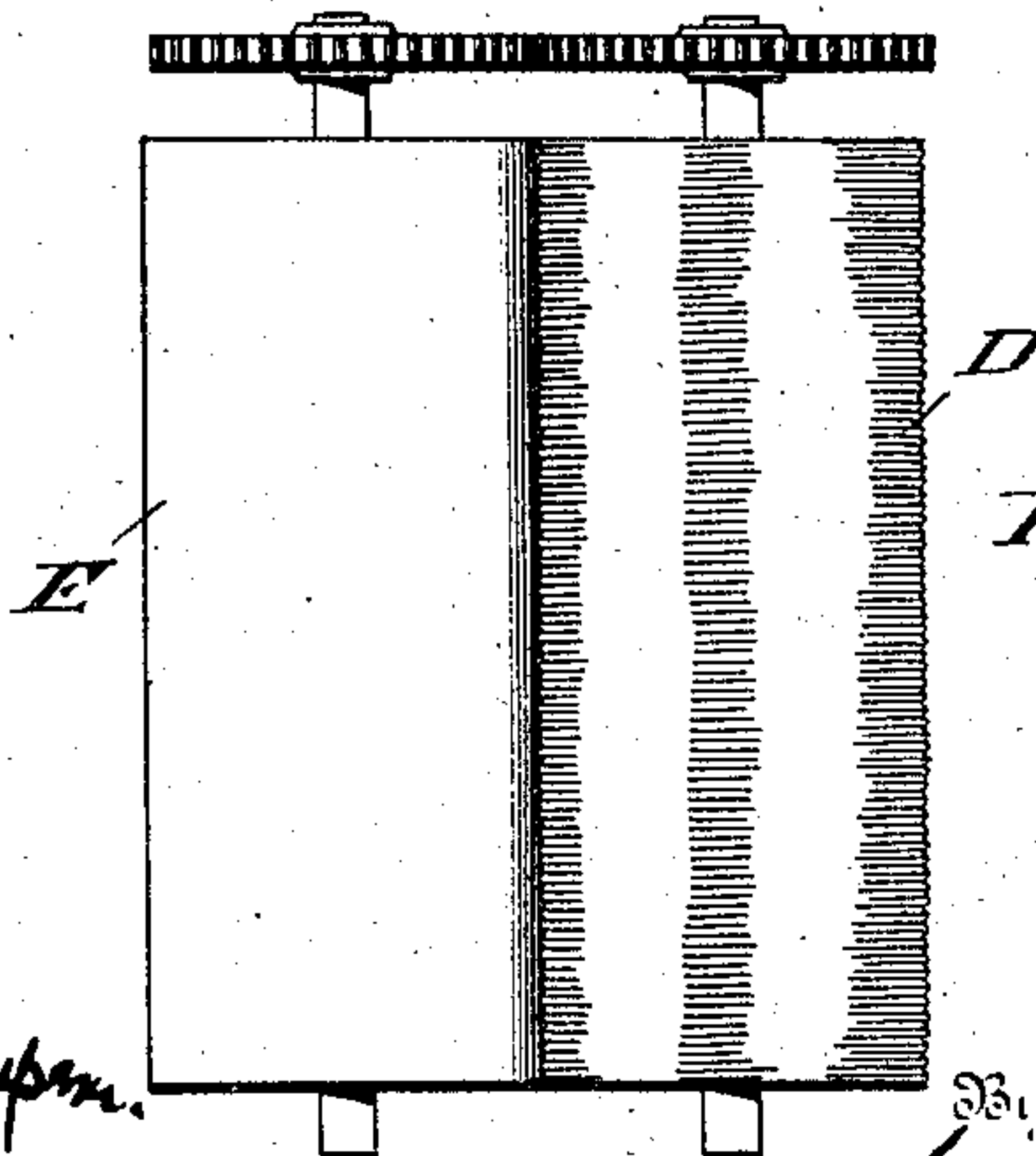
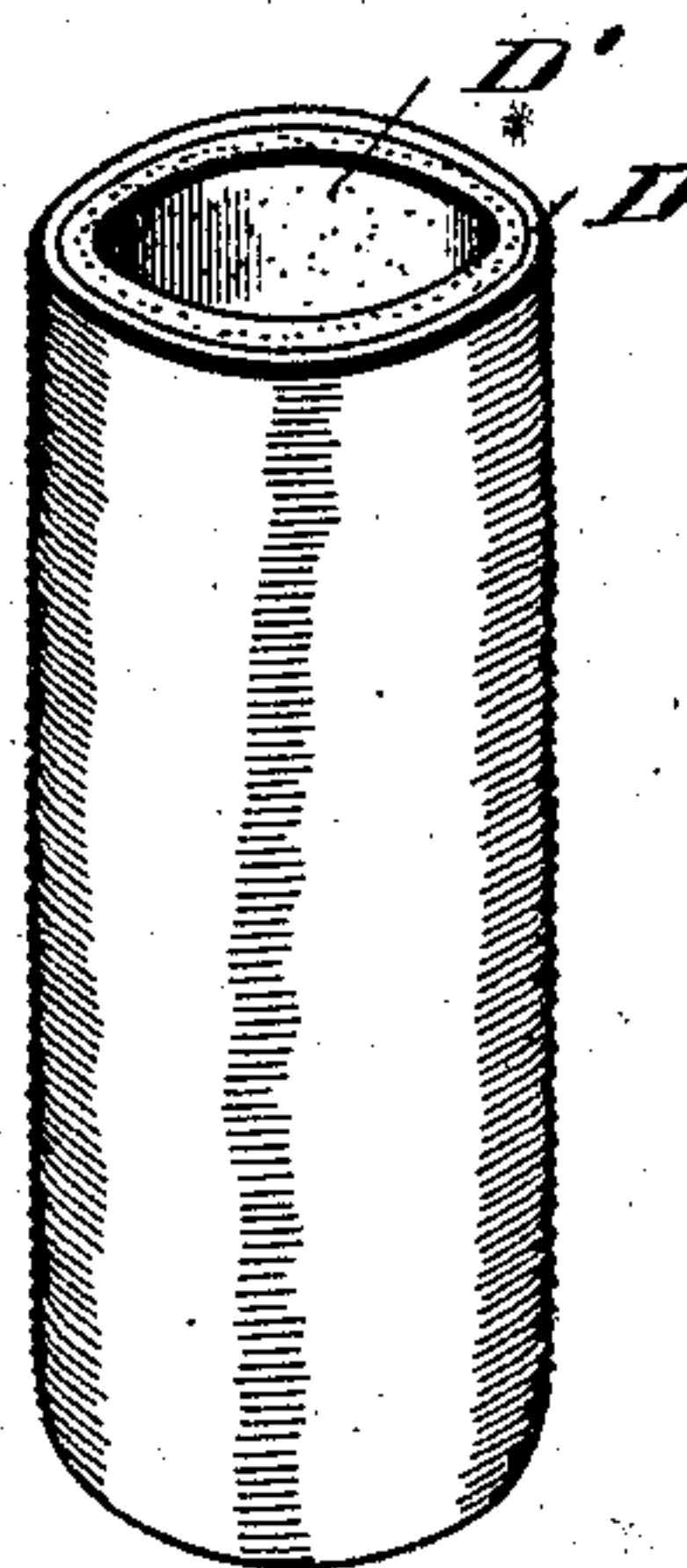


Fig. 4.

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UNITED STATES PATENT OFFICE.

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PRODUCTION OF SOUND-RECORDS.

SPECIFICATION forming part of Letters Patent No. 785,316, dated March 21, 1905.

Application filed April 14, 1904. Serial No. 203,233.

To all whom it may concern:

Be it known that we, GEORGE ABBOTT MANWARING, of Bayonne, Hudson county, and VICTOR H. EMERSON, of Newark, Essex county, New Jersey, EUGENE E. NORTON, of Nichols, Fairfield county, Connecticut, and FRANK L. CAPPS, a citizen of the United States, temporarily residing in London, England, have invented a new and useful Improvement in Production of Sound-Records, which is fully set forth in the following specification.

Our invention relates to the production of cylindrical sound-records by the nurling process; and it consists in the features hereinafter pointed out and claimed.

We first produce an original sound-record upon the inner wall or bore of a hollow cylinder. We next produce upon this record-surface an electroplate which is a unitary and seamless metallic cylinder having the sound-record in reverse deposited directly upon its external surface, and we finally remove this metal cylinder and roll or nurl its record-surface against the external surface of a blank cylinder capable of receiving impressions therefrom.

The invention will best be understood by reference to the accompanying drawings, in which—

Figure 1 is a longitudinal section of the original cylinder while being engraved. Fig. 2 is a similar view of the same while in the plating-bath. Fig. 3 is a perspective of the electroplate, and Fig. 4 is a plan indicating the final step of nurling.

A represents a hollow cylinder composed of suitable material, which for convenience may be designated "wax" or "wax-like," being of any substance suitable for making original sound-records.

B represents a recording device which contains a diaphragm and a recording-stylus that is acted upon by sound-waves through a tube *b'* according to well-known principles. If desired, the bore of cylinder A may be slightly

tapered to facilitate subsequent removal of the electroplate. The cylinder is caused to revolve, and the recording device is caused to progress longitudinally within the cylinder by any suitable mechanism. The mere production of an original sound-record upon the internal surface of a hollow cylinder is not in itself new and may be accomplished by any desirable means. This original sound-record is electroplated in a bath C in the usual manner to secure the electroplate D, deposited upon the record-surface, within the bore of the cylinder A. This electroplate D will preferably be backed up by a strengthening-core D', which may be of any desirable material and may be secured to the cylinder D in any convenient manner. The electroplate, with its backing, is then removed from the cylinder A.

E represents a blank cylinder or "blank" of any suitable material. It may be of the ordinary wax-like composition above referred to, or it may be of the "hard material" now employed in making disk records, or it may even be of still harder materials, metals, or the like. The cylinder E is placed in juxtaposition to the strengthened cylinder D, the two being mounted parallel in suitable mechanism that presses them together gradually, but forcibly, while causing them to revolve with absolute synchronism.

The electroplate D is an integral and continuous metallic cylinder having the sound-record produced by electrolysis directly upon its external surface, whereas heretofore in nurling sound-records the electroplate when first produced contains the record within its bore and is then split longitudinally and flattened or even rolled all the way back to present the record externally, the meeting ends of the electroplate being matched together more or less poorly and then soldered.

The step of making the original record is not new. The step of electroplating a record-surface is not new in itself and may be accomplished in any desirable manner, and, in fact,

some other method than electrolysis may be employed for producing the cylinder containing the reverse record. The step of nurling upon a blank cylinder the irregularities contained by another cylinder is not in itself new and may be accomplished by any convenient mechanism; but our invention consists in the employment of all three of the steps above pointed out in the order stated. Our invention in another aspect consists in employing for the purpose of nurling a sound-record upon a blank cylinder a unitary and seamless metallic cylinder having a sound-record directly electroplated upon its external cylindrical surface. Our invention consists also in the electroplate itself. We do not believe that such electroplate-cylinder has ever been produced before, and we do not believe that sound-records have ever been produced by nurling from such electroplate.

The particular means pointed out for carrying on the various steps of our invention are explained merely for convenience, and we do not limit ourselves to their exact forms and arrangements, nor do we limit ourselves to the particular type of record-groove.

Having thus described our invention, we claim—

1. The method of duplicating sound-records that comprises making a sound-record upon the interior of a cylindrical bore, producing a reversed copy thereof on the external sur-

face of a cylinder, and nurling said reversed copy against a blank cylinder.

2. The method of duplicating sound-records that comprises making a sound-record upon the interior of a cylindrical bore, producing by electrolysis thereupon a cylinder containing on its exterior a reverse copy of said record, and nurling said reverse copy against a blank cylinder.

3. The method of duplicating sound-records that comprises engraving an original sound-record upon the interior of a cylindrical bore in a body of wax-like composition, producing by electrolysis thereupon a cylinder containing upon its exterior a reverse copy of said record, and nurling said reverse copy against a blank cylinder.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

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