No. 680,520. Patented Aug. 13, 1901.

T. A. EDISON.

PROCESS OF MAKING METALLIC DUPLICATE PHONOGRAPH RECORDS.

(Application filed Aug. 18, 1900.)

(No Model.)

Fig. 1

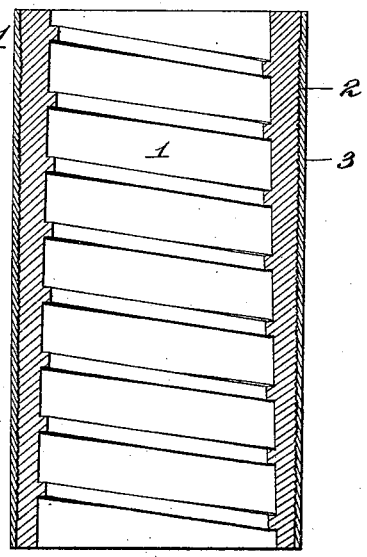


Fig. 2

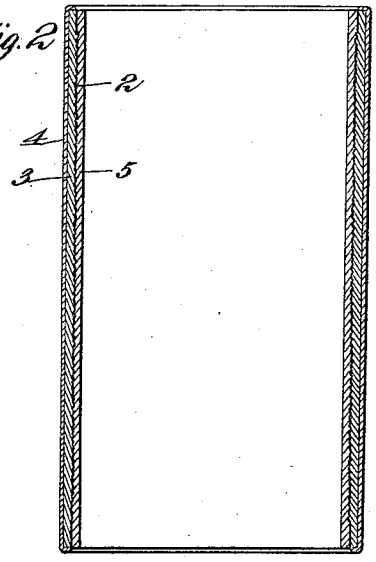


Fig. 3

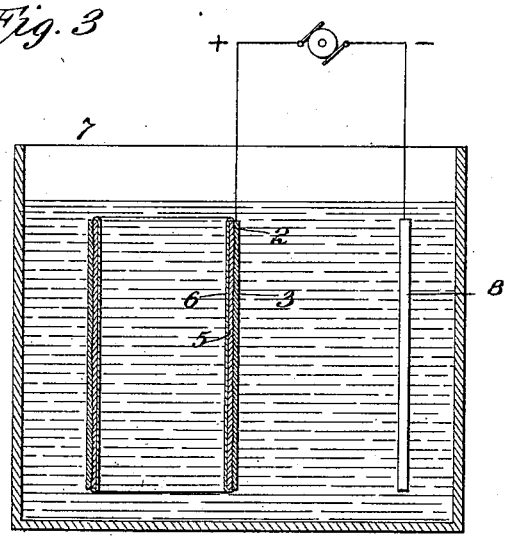
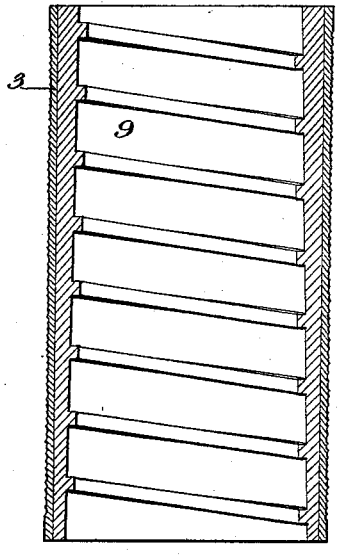


Fig. 4



Witnesses:

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UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF LLEWELLYN PARK, NEW JERSEY.

PROCESS OF MAKING METALLIC DUPLICATE PHONOGRAPH-RECORDS.

SPECIFICATION forming part of Letters Patent No. 680,520, dated August 13, 1901.

Application filed August 18, 1900. Serial No. 27,237. (No specimens.)

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, a citizen of the United States, residing at Llewellyn Park, in the county of Essex and State of New Jersey, have invented a certain new and useful Process of Making Metallic Duplicate Phonograph-Records, (Case No. 1,042,) of which the following is a specification.

My invention relates to an improved process of making metallic copies of phonograph-records.

In Letters Patent No. 657,527, dated September 11, 1900, I describe a process of making metallic copies of phonograph-records consisting generally in first obtaining a matrix or mold of the original record, in then plating a metal upon the record-surface of said matrix, and in finally separating the matrix from the deposited metal, whereby the latter deposit will carry upon its exterior an absolutely-faithful copy of the original record. In said application I describe as a specific embodiment of the process the making of a matrix of copper, the coating of the record-surface thereof with a silver deposit, and the dissolution of the copper matrix by immersion in a hydrochloric-acid bath, which does not affect the silver.

My present invention relates to a specific improvement in a process of this type, wherein I am enabled to employ the same metal both for the matrix and for the copy to be secured therefrom, whereby the process may be somewhat facilitated and cheapened.

In order that my process may be better understood, attention is directed to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a sectional view of an ordinary original phonographic cylinder, showing a thin film of metal preliminarily deposited thereon and a thicker coating electroplated upon such film to form a matrix; Fig. 2, a similar view of the matrix so secured separated from the original record, protected on its outer and end faces with a water-repellent material, and receiving on its record-surface a metal deposit; Fig. 3, a similar view illustrating the matrix with the deposited metal properly protected and immersed in a plating-bath to form the anode, and Fig. 4 a similar view of the finished metallic duplicate record.

In all of the above views corresponding parts are represented by the same numerals of reference.

1 represents a phonographic-record cylinder, which is usually made of a wax or wax-like composition, carrying the record on its exterior in the form of a shallow spiral groove. An original record to be duplicated having been first secured, the said record is coated on its exterior with a minutely-thin film 2 of metal, preferably gold, this film being applied to the record-cylinder by a process of vacuous deposit, as I describe in my Patent No. 526,147, dated September 18, 1894. Having coated the original record with the metallic film 2, a plating 3 is formed on said film by an electrodeposition process until said coating is of sufficient thickness to form the desired matrix. For ease of manipulation and economy of operation the coating 3 is preferably of copper. The record 1 is now removed from the matrix 3 in any suitable way—as, for instance, by shrinking the record by the application of cold or by heating the record, so as to melt the wax-like material thereof. Having thus removed the original record 1, a matrix will be secured carrying on its bore an absolutely-accurate negative copy of the original record, the record-surface of said matrix being obviously protected by the film 2 of gold or other metal different from that of the matrix. This matrix is then provided with a coating 4 (see Fig. 2) of stearin, paraffin, or other water-repellent material, and the matrix is immersed in a plating-bath and a coating 5 electrolytically deposited upon the record-surface of the matrix. This deposited coating 5 may be, and preferably is, of the same metal as the matrix 3—in the preferred instance of copper. It will be observed, however, that the deposit 5 will be separated from the matrix 3 by the intervening film of different metal 2. The protective coating 4 is now removed from the matrix and a corresponding coating 6 (see Fig. 3) is applied to the coating 5, so as to protect the same. The matrix carrying the deposited metal 5 is now immersed in a bath 7 and, as indicated diagrammatically, forms the anode of an electroplating-circuit, the solution in the bath being suitable for plating with the metal of which the matrix

is formed. The circuit through the bath being closed, the metal of the matrix 3 will be deposited upon a suitable cathode 8, whereby the matrix will be electrically dissolved and thereby freed from the deposited coating 5. When the film 2 is reached, which surrounds the deposited coating 5, no further deposit can take place. Having thus removed the matrix 3 from the deposited metal or coating 5, the latter is taken out of the bath, the protective coating 6 is removed therefrom, and a suitable lining or backing 9 of zinc, plaster-of-paris, type-metal, or other material capable of ready manipulation inserted in place therein, so as to form the complete metallic duplicate.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is as follows:

1. A process of making metallic duplicate records which consists in depositing a metallic film on an original phonograph-record, in depositing on said film a different metal to form a matrix, in removing the original record, in depositing upon said film a coating of the same metal as the matrix, and in finally removing the matrix from the deposited metal by an electrolytic action, substantially as set forth.

2. A process for making metallic duplicate records which consists in coating an original phonograph-record with a metallic film, in depositing a metal matrix on said film, in removing the record from the matrix so secured, in depositing a metal on the film or record surface of the matrix, in protecting the last-mentioned metallic deposit, and in separating the matrix from the deposited metal by an electrolytic action, substantially as set forth.

3. A process of making metallic duplicate records which consists in depositing a metallic film on an original phonographic record, in depositing a different metal upon said film to form a matrix, in removing the record from said matrix, in depositing upon the film a coating of the same metal as the matrix, in protecting said deposited coating, and in dissolving the matrix electrolytically, substantially as set forth.

4. A process of making metallic duplicate records which consists in depositing a metallic film on an original record, in depositing a different metal on said film to form a matrix, in removing the original record from said matrix, in placing a protective coating on the matrix, in electrodepositing a metal upon the record-surface of the matrix, in removing the protective coating, in applying a protective coating to the metal deposited on the film, and in dissolving the matrix electrolytically, substantially as set forth.

This specification signed and witnessed this 23d day of July, 1900.

THOS. A. EDISON.

Witnesses:
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