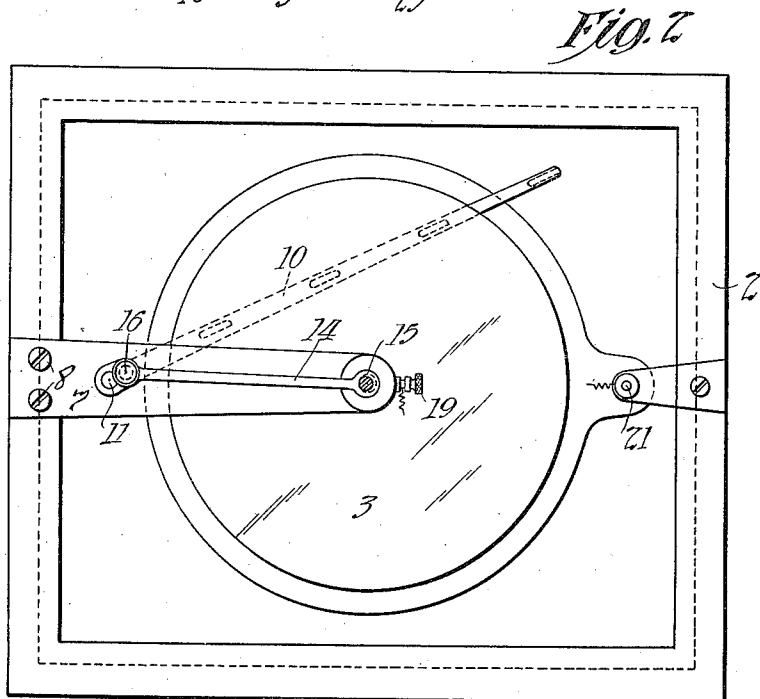
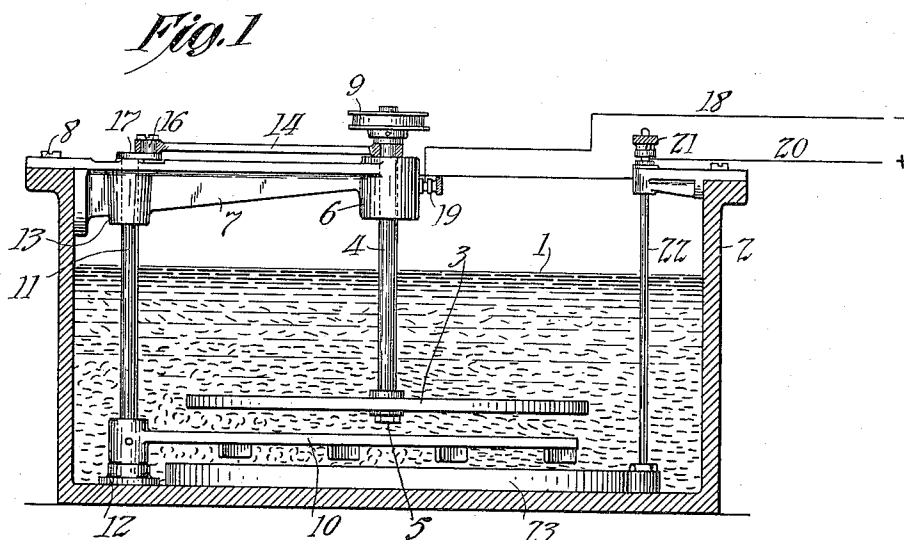


J. W. AYLSWORTH.
 PROCESS OF ELECTROPLATING.
 APPLICATION FILED NOV. 15, 1910.

1,029,965.

Patented June 18, 1912.



Witnesses:
 Frank D. Lewis
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 His Atty.

UNITED STATES PATENT OFFICE.

JONAS W. AYLSWORTH, OF EAST ORANGE, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THOMAS A. EDISON, INCORPORATED, OF WEST ORANGE, NEW JERSEY, A CORPORATION OF NEW JERSEY.

PROCESS OF ELECTROPLATING.

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Specification of Letters Patent.

Patented June 18, 1912.

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To all whom it may concern:

Be it known that I, JONAS W. AYLSWORTH, a citizen of the United States, and a resident of East Orange, in the county of Essex and State of New Jersey, have invented a certain new and useful Process of Electroplating, of which the following is a description.

My invention relates to a process of electroplating objects in an electroplating bath, particularly to electroplating sound record molds or other objects having delicate molded surfaces. Sound record molds or matrices usually formed of copper and having a sound record formed thereon in relief are preferably coated with an extremely thin protective coating of a hard metal, as nickel, in order to protect the same against wear during the operations of reaming or pressing duplicate sound records therefrom subsequently. If such a mold is made the cathode in an electrolytic bath and metal deposited thereon from the bath without especial precaution, bubbles of gas liberated in the electrolytic action tend to form upon the record surface and prevent a uniform deposit of the metallic film thereon.

My object is to obviate this difficulty and to produce an improved metallic surface by burnishing each microscopic portion of metal as it is deposited upon the object in the bath to cause the deposit to be formed with great uniformity and without injury to the molded surface, the burnishing means likewise serving to wipe away bubbles of gas as the same gather upon the molded surface during the electroplating operation. This is accomplished by the process shortly to be described.

In order that my invention may be more clearly understood, attention is hereby directed to the accompanying drawing forming part of this specification, and in which—

Figure 1 represents a vertical cross section through an electroplating bath in which my process may be carried out, certain parts of the apparatus used being shown in side elevation. Fig. 2 represents a plan view of the same.

My improved process consists in preparing a fine soft cellular or fibrous material, putting a considerable amount of the same into a suitable electrolytic bath in which the object to be plated is inserted, causing an electrolytic deposit of metal to be formed

on the object from the bath, while at the same time a relative movement is caused between the object being plated and the bath to cause a continual burnishing or rubbing of the material suspended in the bath on the molded surface of the object being plated. I preferably proceed as follows:—
Finely divided wood pulp is treated with a 5% solution of sodium hydroxid, washed free of the same, and then treated with a moderately strong solution of hydrochloric acid and washed free of the latter. The purified pulp is then loaded into an electroplating bath of the metal to be plated upon the record mold or other object. A greater or less amount of the pulp may be used in the bath which will carry a considerable amount of the pulp in suspension if the bath is continually agitated during the plating operation.

Referring to the drawings, illustrating an apparatus in which my process may be carried out, the bath 1 which may be a nickel-plating bath and in which the pulp prepared as above described is suspended, is contained within the vessel 2. The sound record mold or other object to be plated 3 is secured upon the end of a rotatable conducting spindle 4. The spindle 4 may be screw threaded upon its end and the nut 5 threaded thereon to form a good conducting joint between the mold 3 and the spindle 4. The spindle 4 is rotatably mounted within the sleeve 6 carried by bracket 7 which is secured to the vessel 2 by screws 8. A belt wheel 9 or similar device is secured upon the upper end of spindle 4 for rotating the latter, as by means of a belt, this rotating the mold 3 within the bath.

The mold 3 is preferably suspended near the bottom of the bath, which should be constantly agitated during the plating operation. This may be accomplished in any suitable manner, as by means of the agitator 10 which is secured to the vertical spindle 11, the agitator 10 preferably extending parallel to and quite close to the mold 3. The spindle 11 is mounted in a bearing 12 at the bottom of the vessel, and in a bearing 13 in the bracket 7 and is constantly oscillated laterally back and forth through the bath by means of a link 14, one end of which is connected to vertical spindle 4 by an eccentric connection 15, the other

end of arm 14 being connected by pin 16 to the crank 17 secured to the upper end of spindle 11. Or the bath may be agitated by any other desired means or by hand.

5 In operation, the mold 3 is made the cathode by connecting the same to the negative side of a suitable source of current by means of the wire 18 connected to binding post 19 upon the sleeve 6 within which spindle 4 has frictional contact in rotating. 10 Current is led from the positive side of the source of current by means of connection 20 which leads to binding post 21, and thence by connection 22 to the anode 23 upon the 15 bottom of vessel 2. In the plating operation, the soft mass of pulp contained in the bath constantly brushes over the surface of the mold without injuring the same, as would be the case if a gritty or coarse material were used, the soft pulp brushing 20 away all bubbles as soon as formed, and burnishing down and flattening out the microscopic particles of metal deposited on the mold from the bath.

25 Having now described my invention, what I claim and desire to protect by Letters Patent is as follows:—

1. The process of electroplating an object which consists in immersing the object in a 30 suitable electrolytic bath containing pulp suspended therein, and causing an electrolytic deposit of metal to be formed on said object from said bath, while causing relative movement between the object and the pulp 35 suspended in the bath to cause a continual burnishing or rubbing of the pulp on the object, substantially as described.

2. The process of electroplating an object which consists in immersing the object in a

suitable electrolytic bath containing pulp 40 suspended therein, and causing an electrolytic deposit of metal to be formed on said object from said bath, while agitating the bath and moving the object therein to cause a burnishing of the metal as it is deposited 45 and a wiping away of any bubbles formed on the object by the pulp in the bath, substantially as described.

3. The process of electroplating an object which consists in immersing the object in a 50 suitable electrolytic bath containing finely divided wood pulp suspended therein, and causing an electrolytic deposit of metal to be formed on said object from said bath, while causing relative movement between 55 the object and the wood pulp to cause a continual burnishing or rubbing of the wood pulp on the object, substantially as described.

4. The process of electroplating an object which consists in treating wood pulp or like 60 cellular material with caustic alkali and with acid solutions, placing a considerable quantity of the purified pulp in a suitable electrolytic bath, immersing an object to be plated in said bath and causing an electro- 65 lytic deposit of metal to be formed on said object therefrom, while agitating the bath and causing relative movement between the object and the pulp suspended in the bath to cause a continual burnishing or rubbing 70 of the pulp on the object, substantially as described.

This specification signed and witnessed this 9th day of November 1910.

JONAS W. AYLSWORTH.

Witnesses:

DYER SMITH,
ANNA R. KLEHM.