March 16, 1926. 1,577,357

F. PEANO

METHOD OF PLATING COMPOSITION BODIES

Filed Dec. 17, 1923

Fig. 1

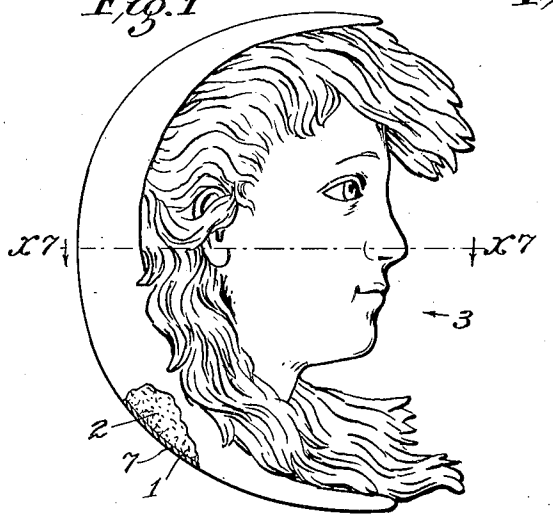


Fig. 2

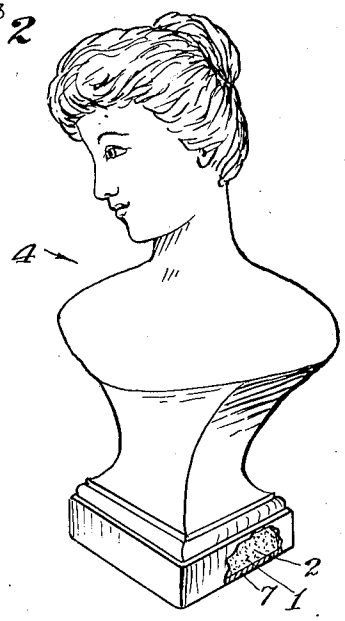


Fig. 3

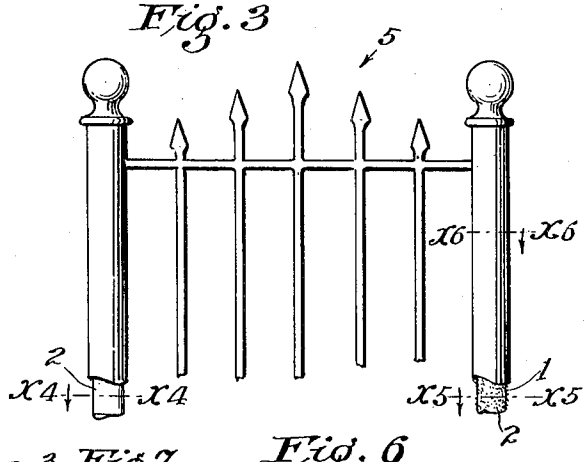


Fig. 4

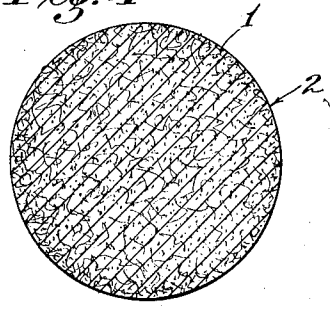


Fig. 5

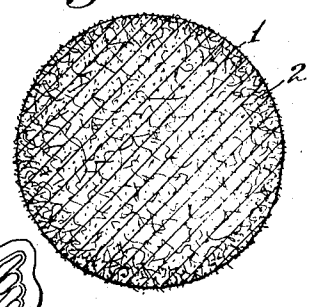


Fig. 6

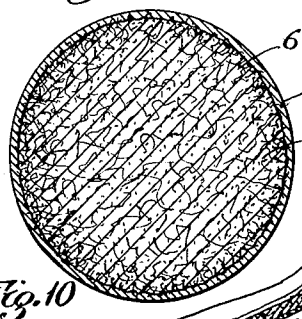


Fig. 7



Fig. 8

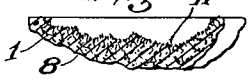
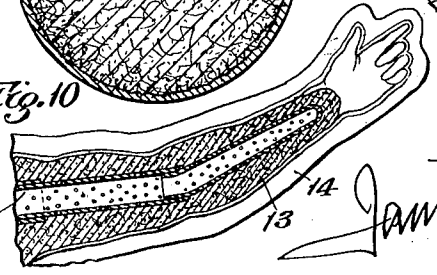


Fig. 9



Fig. 10



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UNITED STATES PATENT OFFICE.

FELIX PEANO, OF INGLEWOOD, CALIFORNIA.

METHOD OF PLATING COMPOSITION BODIES.

Application filed December 17, 1923. Serial No. 681,175.

To all whom it may concern:

Be it known that I, FELIX PEANO, a citizen of the United States, residing at Inglewood, in the county of Los Angeles and State of California, have invented a new and useful Method of Plating Composition Bodies, of which the following is a specification.

An object of this invention is to provide a novel improved method of and means for easily, cheaply and quickly producing and reproducing and preserving and enriching objects made of composition.

An object is to provide novel means whereby there may be quickly, cheaply and easily produced a metal lined mold or die from which numerous sharp casts may be taken.

Another object is to provide a simple method of and means for producing from various objects, composition molds that can be easily and quickly converted into strong and durable metal lined molds from which duplicates of such objects can be easily, quickly and cheaply produced.

Another object is to provide a novel method of and means for making or forming complicated products of composition which may be under cut and generated in pliable molds such as rubber or gelatin and then covering such products with a metal deposit.

Another object is to provide novel means whereby articles constructed of frangible material may be made durable and of added intrinsic value.

Another object is to provide novel means whereby objects having the appearance of being produced by the expensive methods known as casting, modeling, hammering or stamping may be easily, quickly and cheaply produced.

Another object is to esthetically and cheaply produce and reproduce articles and to preserve articles of an impermanent character and to also save time and labor in the production, or in the preservation and beautification of such articles. This I accomplish by producing a metal deposit over the surface of desired articles and tenaciously securing such deposit to the article by providing metal filaments or ramifications extending inside and from the surface of the article into the deposit thereon. Such ramifying metal filaments may be of metal wool.

This invention is applicable to many uses and may be said to broadly consist in producing from any setting material a plastic mass that solidifies or hardens by standing, such as plaster of Paris, cement, or magnesium salts and thoroughly intermingle therewith metal ramifications the outer ends of which are exposed by removing an infinitesimal portion of the body by brushing after the whole is immersed in a pore filling material as hereinafter more fully explained, and then buiding up a metal deposit by the electro-plating process over the desired surfaces of the object and incorporating the exposed points or ends of the metal ramifications in such deposit so that it will be tenaciously secured to the body.

Other objects, advantages and features of invention may appear from the accompanying drawing, the subjoined detailed description and the appended claims.

The accompanying drawing illustrates the invention; the metal wool protrusions in some of the views being somewhat exaggerated for clearness of illustration.

Figure 1 is a view of a relief plaque produced in accordance with this invention, showing a small portion of the metal casing broken away to show the exposed metal wool ends of the brushed composition body.

Fig. 2 is a view of a bust produced in accordance with this invention showing a part broken away to show the brushed composition body with metal wool ends exposed as would appear before the finished casing is produced by the electro-plating process.

Fig. 3 is a fragmental view of an ornamental gate produced in accordance with this invention; showing the upper portion of the gate finished; and also showing a portion of the left hand composition post before brushing and the right hand one after brushing.

Fig. 4 is an enlarged cross section on line x^4—x^4, Fig. 3, showing the composition body before brushing to expose the metal wool ends.

Fig. 5 is an enlarged cross section on line x^5—x^5, Fig. 3, showing the composition body after brushing.

Fig. 6 is an enlarged cross section on line x^6—x^6, Fig. 3, showing the finished product or the composition body enclosed by a metal casing formed by the electro-plating process.

Fig. 7 is a reduced section on line x^7—x^7, Fig. 3, illustrating the appearance of the

plaque when a mold is being produced of the face.

Fig. 8 is a section similar to Fig. 7 with the relief plaque removed from the mold and the interior surface brushed to expose the metal wool to prepare the mold for electro-plating.

Fig. 9 is a section similar to Fig. 8, showing the mold with the interior surface electro-plating forming thereby a metal lined mold that can be used for reproducing facsimiles of the relief plaque.

Fig. 10 is a sectional view of a mold for an arm showing asphalt painted iron reinforcements or copper reinforcements for the cast whereby the arm cannot be easily broken when removed from the mold.

In carrying out the invention in one of its uses I first mix the setting material with water to form a plastic mass of the proper consistency according to the particular use to which it is to be put, i. e., if for pouring into a big mouthed mold it will be of such consistency that it may be rather hard yet adapted to form sharp details by slight pressure, whereas, if the material is to be molded into shape by the hands it will be of still harder consistency. To such mass, I add metal wool 1 such as copper, copper alloys, or lead wool in preference to iron and zinc base wools, and thoroughly intermingle and mix the same therewith so that such wool is well distributed in the mass, especially at the surface to be treated, thereby forming a mixture 2.

The mixture is then poured into a mold, not shown, to form the desired article such as a relief plaque 3 or bust 4, or a perforated decorative sculpture such as a scroll gate 5; or it may be shaped by the hands into the desired article. After the mixture has stood a sufficient time to allow it to thoroughly set it is removed from the mold and its surface as it comes from the mold is smooth as shown in Fig. 4. After exposing said cast to artificial or natural heat so as to evaporate all possible moisture from all depths of the desired article it is then immersed in a paraffin hydrocarbon compound or in any suitable acid proof pore filler that will leave an adhesive surface adapted to retain graphite or copper or other metallic powder to form a bridge from the main electro-conductors and metal wool ends to other wool ends. I then expose portions of the metal wool 1 as shown in Fig. 5 by gentle friction such as brushing the surface to be covered with a brass brush which removes or scratches away the paraffin base filler and portions of the body from over the metal ramifications to expose them to form an electro-conductive surface of such wool to which a metal deposit is to be secured. I then cover such brushed surface with plumbago or copper or other metallic powder to bridge the space between the metal wool ends.

A sufficient total section of exposed metal wool ends is provided at the vat hanging end of the object to be sufficient to carry the positive charge of electricity required by it.

If the article is of such character that the application of the conductor powder or plumbago does not make it suitably conductice to electricity, a few metal conductors such as wire as at 6 may be wound around the object that in a general way distribute the electric force applied in the electro-plating or galvano plastic processes. By having the metal ramifications 1 exposed as above set forth the metal conductors 6 may be spaced a greater distance apart than has heretofore been possible.

The article is then immersed in an electro-plating or galvano plastic solution preferably an acid solution such as sulphate of copper, with its preparation of sulphuric acid, etc., and the electric current is then turned on so that a casing or metal deposit 7 is built up upon the exposed filaments or ramifications of metal wool. When the deposit 7 is of the desired thickness the object is removed from the solution and washed in hot water after which it may be polished, burnished, or art finished as any other article of its kind.

By the foregoing method the exposed metal wool ramifications 1 will be incorporated in the metal deposit 7 and being an integral part or portion of the body of the article will hold such deposit firmly in place and also serve as a reinforcement to the composition from which the body is made.

If any portion of the body is not to receive the metal deposit I may coat such portion with tar, asphaltum or other such medium, to prevent the deposit from accumulating thereon and thereby also prevent waste of metal by avoiding the coating of surfaces which are not desired to be coated.

To form a metal lined mold 8 for the reproduction of objects such as the relief plaque shown in Fig. 1, I first prepare or lubricate such plaque so that the mixture made as above set forth will not adhere to it, then I cover the relief plaque with the mixture as shown in Fig. 7 so that it covers the edges 9 and face 10 of the plaque 3, and let it remain until the mixture has set sufficiently to permit the removal of the plaque. The mold is then dried and dipped to fill the pores of the composition body and the surface 11 formed by the plaque is then brushed as shown in Fig. 8 to expose the metal wool and the metal deposit 12 is then built up in the manner set forth above, and the finished

mold 8 shown in Fig. 9 can then be used to reproduce numerous articles identical with that form which the mold was made. It is understood that such reproductions may be made of various compositions, and also of my novel mixture which may be treated as above set forth.

An advantage is that objects of great size may be cheaply and quickly reproduced by taking a mold of such object and then dipping metal wool in the setting material and tamping such wool and material with the hands into the depths of the mold so that a light weight article of the class set forth may be built up, after which the exterior of the article may be brushed, and a metal deposit built up thereon.

In Fig. 10 a sectional view of a permanently reinforced cast statuary in the form of an arm 13 is shown with one-half of the split mold 14 removed. The mold 14 may be made by a method similar to that shown in Fig. 9.

In reproducing the arm 13 I may use a permanent reinforcing 15 that can be formed of copper or rolled perforated sheet metal asphalt painted or tar dipped that forms a skeleton to the statuary; and this reinforcing is embedded in the ramified mixture that is forced into the mold 14 and around the skeleton.

After the mixture has set the statuary may be finished in the manner set forth above.

This reinforcement 15 may be conveniently used as a primary or supplementary conductor in electro-plating process.

I claim:

1. The method set forth of producing a metal deposit on a composition body consisting of first mixing a setting material to form a plastic mass, then mixing metal wool with such mass, then modeling the mixture into a body of the desired form, then allowing the body to set, then treating surfaces of the body to expose portions of the metal wool, and then treating the body to build up a metal deposit thereon.

2. The method set forth of producing a metal deposit on the composition bodies consisting of first mixing a setting material to form a plastic mass, then mixing metal wool with such mass, then modeling the mixture into a body of the desired form, then exposing a portion of the metal wool at the surface of the body, and then electroplating the body to build up a metal deposit on such exposed surface.

3. The method set forth of producing a metal deposit on composition bodies consisting of first mixing a setting material to form a plastic mass, then mixing metal wool with such mass, then modeling the mass into an article of desired form, then brushing the article to expose the ends of the metal wool over the brushed surfaces of the article, and then immersing the article in an electro-plating solution to build up on such brushed surfaces a metal deposit incorporated with the exposed wool.

4. The method set forth for producing a metal deposit on composition bodies, consisting of first mixing a setting material to form a plastic mass, then mixing metal wool with such mass; then modeling the mixture to form a mody of a desired shape, then filling the pores of the body, then exposing the ends of the metal wool on the surfaces of the body on which the deposit is to be built, then applying a conducting powder to the body between the exposed ends of the wool to connect the same, and then treating the body to build up a metal deposit on the exposed surfaces.

5. An object comprising a body made of a setting material and having metal wool ramifications intermingled therewith.

6. An object comprising a body made of a setting material and having metal wool ramifications intermingled therewith, and having a metal deposit on its surface secured to and incorporated with said ramifications.

7. The method set forth of producing a metal deposit on a composition body consisting of first mixing a setting material to form a plastic mass; then mixing metal wool with such mass; then modeling the mixture into a body of a desired form; then brushing the body to expose the ends of the metal wool; then applying a conducting powder to the body between the exposed metal wool ends to connect the same; and then treating the body to build up a metal deposit on the exposed end of the metal wool.

8. The method set forth of producing a mold from a relief plaque and then reproducing a plaque from its mold consisting of first mixing a setting material to form a plastic mass; then mixing metal wool with said mass; then modeling the mixture over the face and around the edges of a relief plaque that is to be reproduced to form a mold; then permitting the material to set and dry until the mold can be removed from the plaque and handled without breaking; then brushing the inside surface of the mask to expose portions of the metal wool; then electro-plating the inside surface of the mask to form a metal mold; then again mixing metal wool with another plastic mass to form another mixture; then working said other mixture into the metal mold; then permitting the mixture in the mold to set and dry until it can be removed from the mold without breaking; then removing the molded plaque from the mold and brushing it all over to expose the metal wool; then electro-plating the brushed plaque to en-

close it in a metal casing, thus reproducing a plaque that is a facsimile of the original plaque.

9. The method set forth of producing a split metal lined mold of a statuary and then reproducing a statuary from the statuary mold consisting of first mixing a setting material to form a plastic mass; then mixing metal wool with said mass; then plastering the mixture over a statuary to form a pieced mask the parts of which can be easily removed from the statuary when set and dry; then brushing the inside surfaces of the pieces of the mask to expose the metal wool; then electro-plating the inside surfaces of the mask to form a metal lined mold; then again mix metal wool with another plastic mass to form another mixture; then working said other mixture into the metal lined mold and reinforcing the material with a hollow sheet metal skeleton arranged central in the mold; then permitting the material in the mold to set and dry until the statuary thus formed can be removed from the mold and handled without breaking; then brushing the exterior of the statuary thus formed to expose the metal wool; then electro-plating the statuary thus producing a composition reinforced statuary that is a facsimile of the original statuary.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 8th day of December, 1923.

FELIX PEANO.