No. 712,789. Patented Nov. 4, 1902.

T. HAUSERMANN.

METHOD OF METAL ORNAMENTATION.

(Application filed Sept. 28, 1901.)

(No Model.)

Fig. 1.

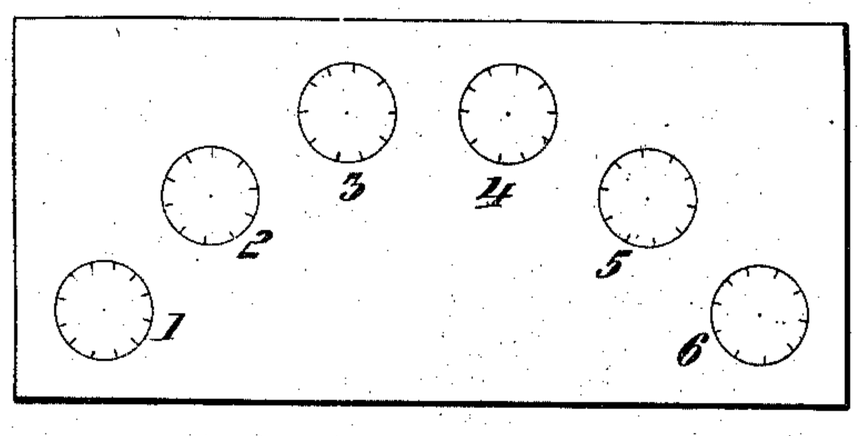


Fig. 2.

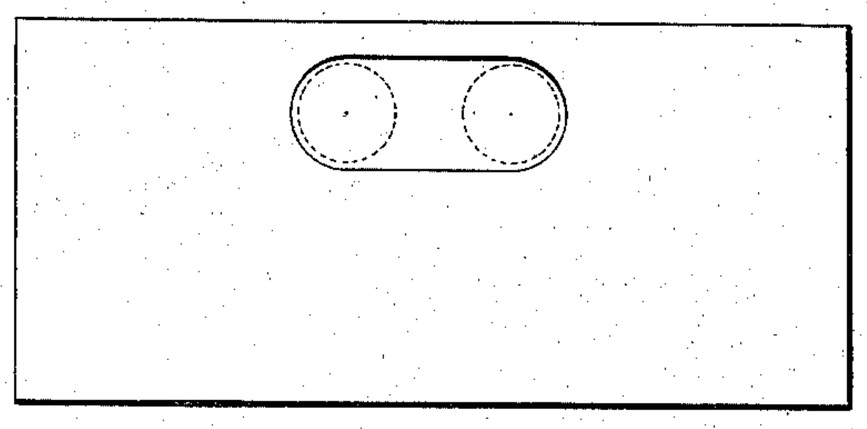


Fig. 3.

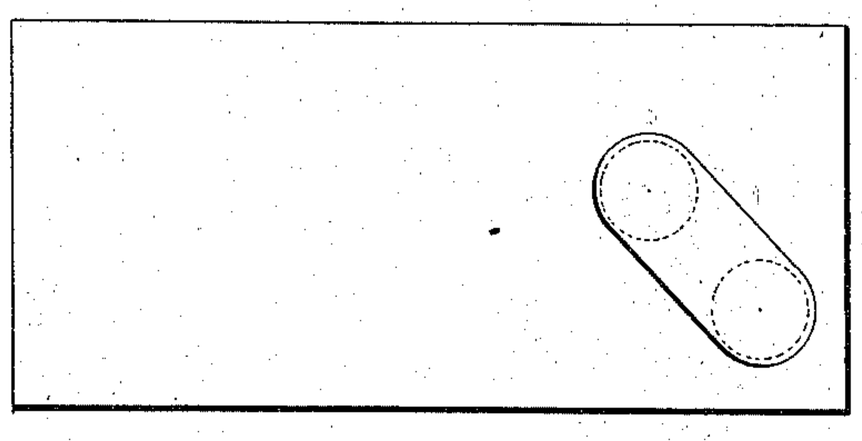
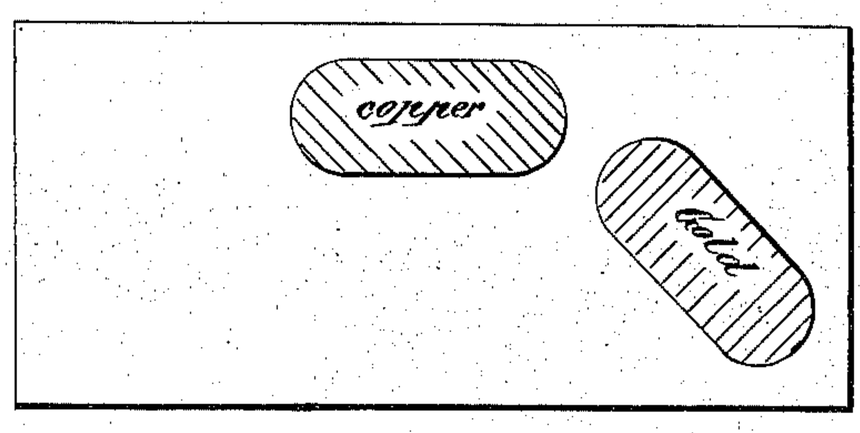


Fig. 4.



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UNITED STATES PATENT OFFICE.

THEODOR HÄUSERMANN, OF VIENNA, AUSTRIA-HUNGARY

METHOD OF METAL ORNAMENTATION.

SPECIFICATION forming part of Letters Patent No. 712,789, dated November 4, 1902.

Application filed September 28, 1901. Serial No. 76,855. (No specimens.)

To all whom it may concern:

Be it known that I, THEODOR HÄUSERMANN, a subject of the Emperor of Austria-Hungary, residing at Vienna, in the Empire of Austria-Hungary, have invented a certain new and useful Improvement in the Method of Metal Ornamentation, of which the following is a full, clear, and exact description.

The object of the present invention is a method for producing brilliant black decorations, inscriptions, &c., in rilievo on a dead silver ground, or vice versa.

In the accompanying drawings, Figure 1 is a plan view of a plate, showing six dials and which are to be in three different colors—*i. e.*, dials 1 and 2 black, 3 and 4 red, and 5 and 6 gold-colored. Fig. 2 shows the plate covered by a pattern, with the exception of dials 3 and 4. Fig. 3 shows the plate covered by a pattern, with the exception of dials 5 and 6. Fig. 4 shows the copper and gold deposits covering the spaces left uncovered by the patterns seen in Figs. 2 and 3.

Heretofore it has not been possible to produce with the usual methods black or multicolored decorations or inscriptions on a dead silver ground.

The object of the present invention is to produce not only brilliant decorations on a dead silvered ground, using the well-known chromatic-glue solution as a covering layer, but also the appearance of the ornamentation in rilievo on the silvered ground. Also brilliant decorations, consisting of brass, copper, and nickel in rilievo on a dead black or oxidated or a colored metal ground, can be produced by my method.

My method is as follows: A clean metal plate, as of brass, is covered with a solution of chromate glue. After distributing and drying the solution by means of a suitable centrifugal device the plate is exposed in the usual manner, developed, and heated over an intense gas-flame until the chromate-glue drawing appears of a dark-brown color. Then the plate is immersed a few minutes in a solution consisting of one part of bichromate of potassium and one part sulfuric acid (66° Baumé) and water, so that the solution has a density of 14° Baumé. The plate is then cleaned under a suitable sprinkler and the deposit removed with a sponge. To obtain a fine and dead surface, the plate and also the solution must be brought in a constant circulation by a suitable mixing device. In this manner after about five minutes a perfectly equal dead corrosion of golden appearance is produced. Then the dead corroded surfaces of the plate are coppered in an acid-copper bath. This process requires about one minute with a tension of one-half volt and gives a finely-granulated deposit, corresponding to the corroded parts, which latter are then electrosilvered in the usual manner. The coppering of the plate adapts the silver plating to readily and uniformly adhere to the copper surface, thus producing better results. From the silvered metal plate, on the surface of which the chromate-glue drawing appears on the dead silvered ground, or vice versa, the chromate-glue layer is removed in a warmed lye of carbonate of soda, so that at these places the blank metal color appears. The uncovered decoration is then corroded black, and the surface may be covered with a colorless lacquer.

Metal objects treated as described show sharp metal blank and colored ornaments on a dead silvered or colored ground in rilievo.

If multicolored ornaments are to be produced on a dead silvered or black ground, the metal object receives upon the points where an otherwise colored decoration is to be produced by a galvanic bath under a pattern an electrodeposit of the desired color, and then the prepared plate is subjected to the process before described. For instance, on an index-plate there are to be produced dials of three different colors, so that (see Fig. 1) dials 1 and 2 are black, dials 3 and 4 red, and dials 5 and 6 are gold color. For attaining the desired object the smooth yellow brass plate is brought in a copper-bath under a pattern, as shown in Fig. 2, which covers the whole plate except dials 3 and 4, which receive a copper deposit, and then under the second pattern with openings for the dials 5 and 6 in an electrogold-bath, so that dials 5 and 6 receive a gold deposit. The prepared plate is carefully washed and then covered with a layer of chromate glue, exposed under a negative, and developed, the remaining covering layer burned, and then the plate is brought in a metal-corroding bath, which consists of bichromate of po-

tassium and sulfuric acid and water, in which bath the electrodeposits (gold and copper) are corroded, excepting the parts covered by the chromate glue, and also the fine granulated ground is deadened, which metal ground is then coppered and silvered or blackened by the process before described. When the covering layer is removed in a diluted lye, the parts below the layer appear in the colors of the electrodeposits—*i. e.*, the dials 1 and 2 appear in the natural yellow brass color, dials 3 and 4 appear coppered, and dials 5 and 6 golden.

When the object is treated in a metal color—for instance, copper—the blank yellow brass of dials 1 and 2 becomes black, while other parts of the metal (copper and gold) remain in their natural color. The patterns are made of a non-conducting material which is not attacked in a galvanic bath, preferably of ebonite or hard rubber, which does not adhere to the metal surface to be covered.

To obtain better results, it is advantageous to corrode slightly the objects before they are treated in the bath which gives the electrodeposits forming the ground color.

What I claim, and desire to secure by Letters Patent, is—

1. The herein-described steps in the method of ornamenting metal, which consists in first covering the metal plate to be decorated, with a solution of chromate glue and allowing the covering to dry, then exposing the covered plate under a negative, developing the drawing, heating the plate to the extent described, subjecting the plate to the corroding action of a solution such as described, washing the plate, applying an electrodeposit of copper to the plate, electrosilvering the same and then removing the covering layer.

2. The herein-described steps in the method of ornamenting metal, which consists in first applying an electrometal deposit to a metal plate to be decorated, applying a solution of chromate glue to the plate, allowing the covering to dry, exposing the covered plate under a negative, developing the drawing, heating the plate to the extent described, subjecting said plate to the corroding action of a solution, such as described, washing the plate, applying an electrodeposit of a metal to the plate and electrosilvering the same and then removing the covering layer.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

THEODOR HÄUSERMANN.

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