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PROCESS OF DECORATING METAL
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Fig. 1.

__PLATING__

__BASE METAL__

Fig. 2.

__CEMENT__

Fig. 3.

__METAL LEAF__

__CEMENT__

__PLATING__

Fig. 4.

__METAL LEAF__

__PLATING__

__BASE METAL__

Fig. 5.

__METAL LEAF__

__PLATING__

__BASE METAL__

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The present invention relates to a process for decorating metals by cementation suitable for use in connection with iron, copper, nickel or their alloys by means of precious metals such as gold or silver applied in beaten sheets upon the surface of the metal to be decorated.

The process resides essentially in the use of a cement composed of a solution of a mastic resin which in natural formation, exudes in tears from plants, and yellow petroleum jelly, dissolved in a hydro-carbon or cyanide rich in carbon or hydrogen, preferably ethylene trichloride or carbon tetra-chloride.

The process is particularly applicable to plates or bars of steel, iron, brass or other common base metals for obtaining decorative and non-oxidizable effects. It consists in the superposition of precious metals, such as gold, silver, aluminum in leaf form, applied upon ordinary base metals which have been previously polished, nickeled or chromium plated.

Following the process, the cement hereinbefore described is spread over the part of the chromium plated metal to be worked, which has been previously cleaned with care.

The sheet of precious metal is subsequently placed on the coat of cement and the object thus prepared is subjected to a high temperature sufficient to assure cementation and to obtain the decorative results sought.

The layer of cement and the precious metal then melt and become an integral part of the object being treated and when the excess of precious metal which has not been absorbed, is removed, the object appears with its decoration in non-alterable form and resistant to nitric acid.

The object is also rendered non-oxidizable.

From the foregoing, the advantages of my improved process will be obvious. The decorative effects may be readily varied in shape and color in accordance with the base metal used and in accordance with the precious metal employed.

The metal utilized as a base preserves, after treatment, all its initial qualities which allows it to be beaten out in sheets of various sizes and to be cut as needed and formed or hammered in shape without fear of altering the decoration or ornamentation. Industrially, the process is preferably carried out on large sheets of metal, which are cut out after treatment, to meet the size requirements of the finished articles.

In order that the invention may be more clearly understood by those skilled in the art, I have in the accompanying drawing diagrammatically illustrated the various steps of the process.

In the drawing:
Figure 1 illustrates in section a portion of plated base metal to be treated;
Figure 2 shows the cement applied thereto;
Figure 3 illustrates the leaf of precious metal placed over the cement;
Figure 4 is a representation of the metal after heat treatment, and
Figure 5 represents the finished product.

In practicing my improved process, I take a piece of ordinary metal such as steel, brass, etc., previously polished, nickeled and chromium plated, as shown in Figure 1 of the drawing, which is done in the ordinary manner well known in the art. The metal sheet thus treated is then thoroughly cleaned and this may be done by use of a rag soaked in benzine or the like, and carefully wiped to remove greasy matters. The piece of metal must be thoroughly cleaned on all of its sides. I then apply freely upon the cleaned plated surface, with a suitable brush, a coat of cement of the character hereinafter mentioned. In applying the cement over the metal piece, I find it advantageous to run the brush in all directions over the piece, as this eliminates markings made by the brush while applying the cement, and causes said cement to be applied evenly and uniformly over the plated metal in the manner represented in Figure 2 of the drawing.

Immediately after the cement has been applied and while it is still wet, I place thereon, as illustrated in Figure 3, the leaves of gold, silver or the like, using suitable known means for that purpose, taking care to evenly distribute the leaves of gold or silver or the...
like throughout the entire surface of the metal piece thus coated.

To assure the proper adherence of the gold or silver leaves to the plated metal piece, a tissue paper may be placed thereover and slightly pressed thereon, but the tissue paper must be thereafter immediately removed to prevent its sticking.

After the piece of metal has thus been prepared, it is then heated at high temperature to obtain the decorative effect, whereby the coat of cement and the applied metal leaf are fused and become an integral part thereof. The degree of heat to which the treated piece of metal is subjected, of course, will vary depending upon the thickness and hardness of metal used. In all events, the metal should be heated until red.

With the beginning of the cementation, there appears at the surface of the metal a yellowish reek, which, however, disappears when the heated treatment is completed. If spots remain on the surface of the metal when withdrawn from heat, it is because the cementation is not thorough, and the metal should again be subjected to high heat until it appears clear when withdrawn therefrom.

When the cementation appears completed and the treated metal piece is red hot, it is withdrawn from the heat and permitted to completely cool. By subjecting the treated metal to the heat treatment, the evaporation of the excess of the cement causes the metal piece to swell in parts over the plated surface of the base metal and, of course, such swelling does not adhere to the plated metal, but forms a design of peculiar effect, which appears clearly after cooling of the metal, in the manner represented in Figure 4 of the drawing.

After the heated metal piece has completely cooled, it is rubbed preferably with a hard bristled brush to remove all portions of the decorating metal, that is, the swellings which do not adhere to the decorated metal piece. The metal piece then presents a face ornamented with odd designs, as illustrated in Figure 5, composed by the sections of the metal leaf which have become fused to the base metal but retains its natural aspect, and the exposed portions of the plated surface which appears in various tones due to its subject to intensive heat and probably also due to the reaction of the cement composition thereon.

The cement composition forms hydrocarbons which when subjected to the heat treatment, apparently combine with the plated metal imparting an increased hardness thereto and rendering it non-oxidizable.

The resin in the cement does not retain its body but is dissolved in the liquid cement. The resin therefore, is not burnt but penetrates with the cement solution in the base metal upon being treated. The resin is used in the first instance to cause the adhesion of the metal leaf to the plated metal to be treated.

As a final step, after brushing the decorated or ornamental metal pieces in the manner hereinbefore described, said metal piece may be cleaned by means of a rag soaked with benzine to remove deposits caused by the heat and subsequently dried by means of a dry rag.

If desired, guide plates or stencils may be used to prevent certain parts of the metal from becoming covered with the cement, whereby to provide various ornamenting effects upon the finished product.

The finished product does not necessitate any polishing or lacquer, because during the process, the precious metal leaves do not lose their natural aspects.

I claim:

1. A process for decorating metallic surfaces which comprises covering the parts of the object to be treated with a coat of a mixture of mastic resin and petroleum jelly dissolved in a hydro-carbon, pasting metal leaf on the said coat and heat treating to produce cementation of the metals and obtain the decorative effect.

2. A process for decorating metallic surfaces which comprises covering the parts of the object to be treated with a coat of a mixture of mastic resin and petroleum jelly dissolved in a cyanide, pasting metal leaf on the said coat and heat treating to produce cementation of the metals and obtain the decorative effect.

3. A process for decorating metallic surfaces which comprises covering the parts of the object to be treated with a coat of a mixture of mastic resin and petroleum jelly dissolved in ethylene trichloride, pasting metal leaf on the said coat and heat treating to produce cementation of the metals and obtain the decorative effect.

4. A process for decorating metal-plated surfaces which comprises covering the parts of the object to be treated with a coat of a mixture of mastic resin and petroleum jelly dissolved in ethylene trichloride, pasting metal leaf on the said coat and heat treating to produce cementation of the metals and obtain the decorative effect.

5. A process for decorating chromium plated surfaces which comprises covering the parts of the object to be treated with a coat of a mixture of mastic resin and petroleum jelly dissolved in ethylene trichloride, pasting metal leaf on the said coat and heat treating to produce cementation of the metals and obtain the decorative effect.

In testimony whereof I hereunto affix my signature.

VEUVE F. MALLEVAL, né BERTHE BURLET.