March 14, 1933. K. TAKEDA 1,900,960

METHOD OF DECORATING METAL SURFACES

Filed Jan. 19, 1931

Fig. 1.

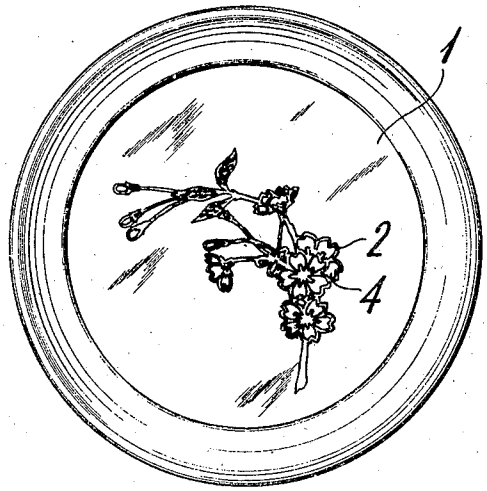


Fig. 2.

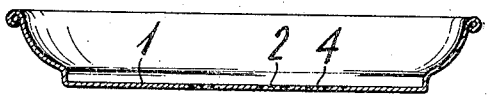


Fig. 3.

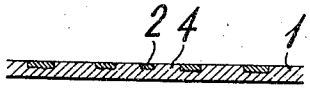


Fig. 7.

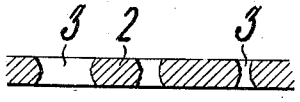


Fig. 4.

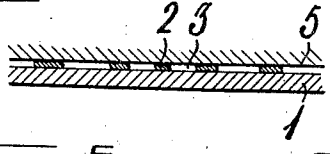


Fig. 8.

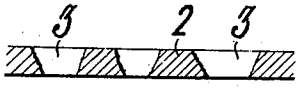


Fig. 5.

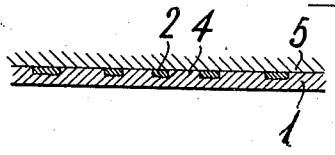


Fig. 6.



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UNITED STATES PATENT OFFICE

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METHOD OF DECORATING METAL SURFACES

Application filed January 19, 1931. Serial No. 509,671.

The present invention relates to an improved method for producing metal inlaid work which substantially consists in pressing a metal plate with any patterns perforated by etching or the like into metal surfaces to be inlaid. The object of the invention is to provide a new improved method, by means of which metal marquetry with highly decorative effect may be produced, patterns of different kinds or colours being inlaid quite easily on metal surfaces, where desired.

In the accompanying drawing Fig. 1 shows by way of example a plan of an inlaid metallic article (a tray) produced by the present invention, Fig. 2 is a section of same, Fig. 3 is an enlarged section of part of same, Fig. 4 is an enlarged section just before pressing, Fig. 5 is an enlarged section after compression. Fig. 6 is a plan of an example of the pattern plate, and Figs. 7 and 8 are enlarged sections of part of same.

In the present invention aluminium plates are chiefly used as the material for articles to be inlaid, but any other soft materials, such as copper, silver, etc. may be employed instead, when desired. The pattern plate (2) is of material, preferably a little harder than that of the plate (1) to be inlaid; for example, the plate (2) may be of copper, brass, or other metals electroplated in different colours, for aluminium or silver articles. The pattern plate has perforations of reticulated form or any other patterns formed by etching. It is placed on the metal surface (1) and both plates are pressed strongly upon the male- or female-mold or the anvil (5).

The present method of producing decorative surfaces may be carried out by first perforating and forming as, for example, by etching, a pattern of suitable design from relatively hard material, and thereafter placing the pattern and plate or article to be decorated, the latter being of relatively softer material than that of the pattern, on a rotatable male or female mold, depending upon the character of the article to be decorated, and by rotating the mold together with the plate and pattern, and gradually exerting a pressure on the plate adjacent the pattern and at the opposite side of the plate therefrom, preferably, by means of a roller or other similar device, thereby locally displacing the material of the plate and pressing it into the perforations and around the pattern which will become completely embedded on three sides in the material of the plate to be decorated so as to form a perfect inlay. While exerting a pressure on the plate in the manner above described, the rotation of the mold, together with the plate and pattern may be periodically reversed, thereby more thoroughly displacing the material of the plate in different directions at the perforations to more uniformly fill the perforations adjacent the exposed surface of the pattern and provide a more complete anchorage of the pattern in the material of the article to be decorated.

When perforations are formed by etching from both sides more material is eaten out near the surface than the middle part of the plate, so that the section of the side of the perforation will form a curved line projecting inwards at the middle point, as shown in Fig. 7, while the perforations is of truncated conical form, when etched from one side, as shown in Fig. 8. In both cases patterns may be firmly held by the plate (1) through the material of the latter displaced and completely filling up the perforations of these special sectional forms. A complete connection of both plates may further be secured by the inner side of perforations, which presents a rough and uneven surface when made by etching, and which is completely filled up by horizontal displacement of the material of the plate (1).

It will be observed from the foregoing description, that by reason of the working of the material of the plate (1) into the perforations having the peculiarly formed sides as illustrated in Figs. 7 and 8, that a most complete and secure anchorage of the pattern (2) with the plate (1) is obtained.

In the case of patterns formed not by etching part of the material may be displaced horizontally about the perforation during the compression, so that detachment of the pattern plate is also out of question.

I claim:

1. The method of decorating metal surfaces which consists of forming a perforated pattern of relatively hard metal, positioning the pattern on the surface of an article to be decorated, formed of relatively softer metal, placing the pattern and article on a mold, and thereafter rotating the mold, article and pattern in opposite directions while exerting a pressure thereon to force the softer material of the article into the perforations and around the harder material of the pattern.

2. The method of decorating metal surfaces which consists of forming a perforated pattern of relatively hard material by etching, positioning the pattern on the surface of an article to be decorated formed of relatively softer metal, placing the pattern and article on a mold, and thereafter rotating the mold, article and pattern in opposite directions while exerting a pressure thereon to force the softer material of the article into the perforations formed in the pattern and around the edges thereof.

3. The method of decorating metal surfaces which consists of forming a perforated pattern of relatively hard material by etching, positioning the pattern on the surface of an article to be decorated formed of relatively softer material, placing the pattern and article on a mold, and thereafter rotating the mold, article and pattern alternately in opposite directions while exerting a pressure thereon to force the softer material of the article into the perforations formed in the pattern and around the edges thereof.

4. The method of decorating metal surfaces which consists of forming a perforated pattern of relatively hard material by etching, positioning the pattern on the surface of an article to be decorated formed of relatively softer material, placing the pattern and article on a mold, and thereafter rotating the mold, article and pattern alternately in opposite directions while exerting a pressure thereon by a rolling contact to force the softer material of the article through the perforations and around the edges of the pattern to the exposed surface thereof.

KENJIRO TAKEDA.