April 16, 1929. L. WEIDLICH ET AL 1,709,048

METHOD OF MANUFACTURING DIES

Original Filed April 10, 1924

Fig. 1

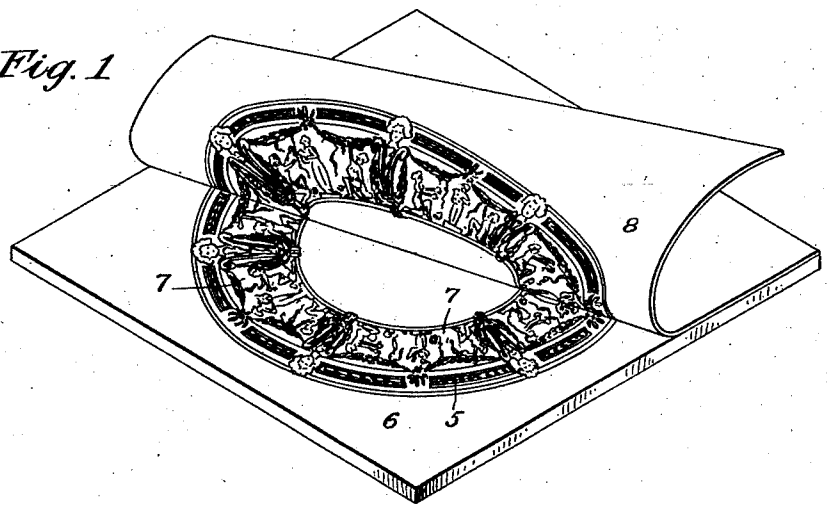


Fig. 2

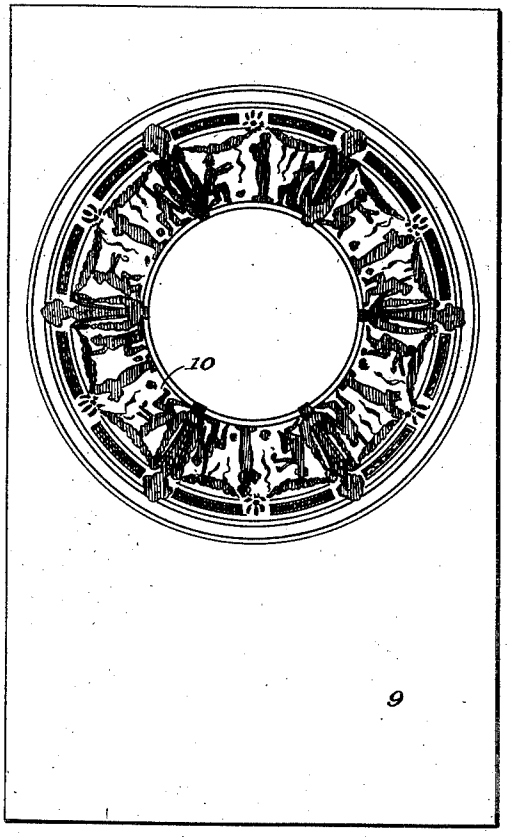


Fig. 3

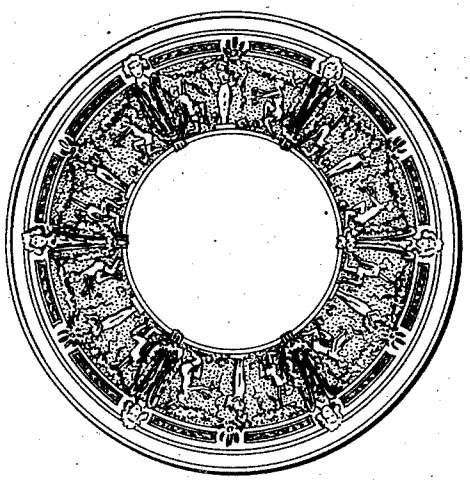


Fig. 4



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Patented Apr. 16, 1929. 1,709,048

UNITED STATES PATENT OFFICE.

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METHOD OF MANUFACTURING DIES.

Application filed April 10, 1924, Serial No. 705,508. Renewed September 7, 1928.

Our invention refers to an improved method of manufacturing dies, from steel or other suitable metal, for use in the manufacture of ornamental silver or other metal ware, by either a rolling or stamping process.

The present practice of producing dies for manufacturing standard and novelty designs or ornamented silver pieces, is to produce the same by hand work, requiring days of tedious and expensive labor, thereby running the cost of a single die, from which a simple silver piece may be stamped, into hundreds of dollars. As there is usually only a limited number of the larger or more expensive pieces made from a single die of this sort, the die cost per piece is necessarily a big item.

The object of the invention therefore is to provide a new method by which dies of the above class and suitable for the purpose specified may be produced very much cheaper than they are made at the present time.

This improved method is especially applicable and shows a great saving in the production of shallow dies, as used for producing silver pieces having surface ornamentation, of either standard or novelty patterns but can be used to advantage on either hollow ware, flat ware or novelties.

With these and other objects in view the invention resides and consists in the construction and novel combination and arrangement of parts hereinafter more fully described, illustrated in the accompanying drawings and pointed out in the claims hereto appended, it being understood that various changes in the form, proportion, size and minor details of construction within the scope of the claims may be resorted to without departure from the spirit or sacrificing any of the advantages of the invention.

Similar characters of reference denote like or corresponding parts through the several figures of the accompanying drawings forming a part of this specification, and upon which

Fig. 1 shows a perspective view of a flat metal plate upon which an original design is painted, and also shows a paper transfer sheet in the process of being removed from the plate;

Fig. 2 is a plan view of a die formed in the reverse of the design shown in Figs. 1 and 3;

Fig. 3 shows a plan view of a metal dish, the surface ornamentation of which was formed by the die shown in Fig. 2; and

Fig. 4 is a cross section of the dish shown in Fig. 3.

Our improved method of forming dies is carried into effect by first producing the ornamental design 5 preferably by painting the same upon a metal plate 6 such as copper, the area of the surface of the metal between the painted portions being left bare, the design being such as is ultimately produced upon the finished article as shown in Fig. 3.

An etching acid is then spread upon the plate 7 which eats down into the bare portions between the painted portions, which eating process takes about twenty minutes and forms the backgroud of the decoration.

The plate is then coated with a layer of suitable transfer material, such as an asphalt composition, which is lightly wiped off, leaving the painted design exposed and the unpainted background area 7 coated with asphalt.

The background of the design is next transferred as by means of a sheet of paper 8 or the like to a steel die plate by placing the sheet upon the original coated plate 6, and passing a roller or other suitable means over it, so that the asphalt material contained on the background portion of the plate and representing the design will adhere to the paper and be removed from the plate as the paper is peeled off, as indicated in Fig. 1.

The transfer sheet is next placed face down upon a steel die plate 9 shown in Fig. 2, and the coating is transferred to the steel die plate by rubbing or snugly rolling the same, and then moistening the paper, so that upon gently removing the paper the asphalt material adheres to and remains upon the die plate thereby printing and transferring the design thereon. By this operation all that portion of the area 10 between the figures of the design and representing the background would be covered, the design itself would be uncovered and represented by the bare metal.

The die plate is now ready for etching, and for this purpose the transfer material which has just been placed thereon covering the background of the design must be acid-resisting. The etching medium, such as nitric acid is now applied to the die plate and eats down into its exposed portions, producing thereon

the same design in intaglio, thereby completing the die plate which after being cleaned is ready for use as seen in Fig. 2.

Our preferred method of using this die is to place it face side down upon a metal sheet to be ornamented, such as sterling silver, and then the two run between two heavy rolls whereupon there is impressed in the metal silver sheet a design that is produced in the positive or original.

These flat sheets of ornamented metal may then be cut out and placed between suitable forming dies whereby the desired shape or form of the dish or article is produced as shown in Figs. 3 and 4. The edge portion of the dish may be rolled or otherwise finished as desired.

It will be obvious that the particular design or shape of articles to be produced has nothing to do with the method employed, and the method can be used to advantage and saving in producing most all sorts of silverware.

We find that dies of this kind are in every way as practical and durable as those made by hand, at a very much greater expense and can be used for producing practically all classes of designs for which the hand-made dies are used.

Having thus described our invention, what we claim and desire to secure by Letters Patent is:

1. The herein described method of manufacturing dies, which consists in painting a design on a plate whereby an unpainted background area is provided, etching the uncovered area of said plate, covering said etched area with a transfer material, transferring said transfer material to a die plate, and then etching said die plate around the transferred material to produce the design in reverse therein.

2. The herein described method of manufacturing dies, which consists in painting a design upon a plate, etching the uncovered area of said plate, covering said plate with a transfer material, removing said material from the painted area, transferring said transfer material from the unpainted area to a die plate to produce the design in a reverse thereof, and then etching the design in said die plate.

3. The herein described method of manufacturing dies, which consists in painting a design upon a plate, taking a transfer impression of the background of said design and transferring the same to a die plate, providing said die plate with an etching ground covering said transferred background, and etching the reverse of said design in the die plate.

4. The method of manufacturing dies consisting in painting a design on a plate, etching the plate around the painted design, covering the etched portion of the plate with transfer material, transferring said material to a die plate, and etching said die plate around said material to produce the design in reverse in the die plate.

Signed at Bridgeport in the county of Fairfield and State of Connecticut this 5th day of April A. D. 1924.

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