

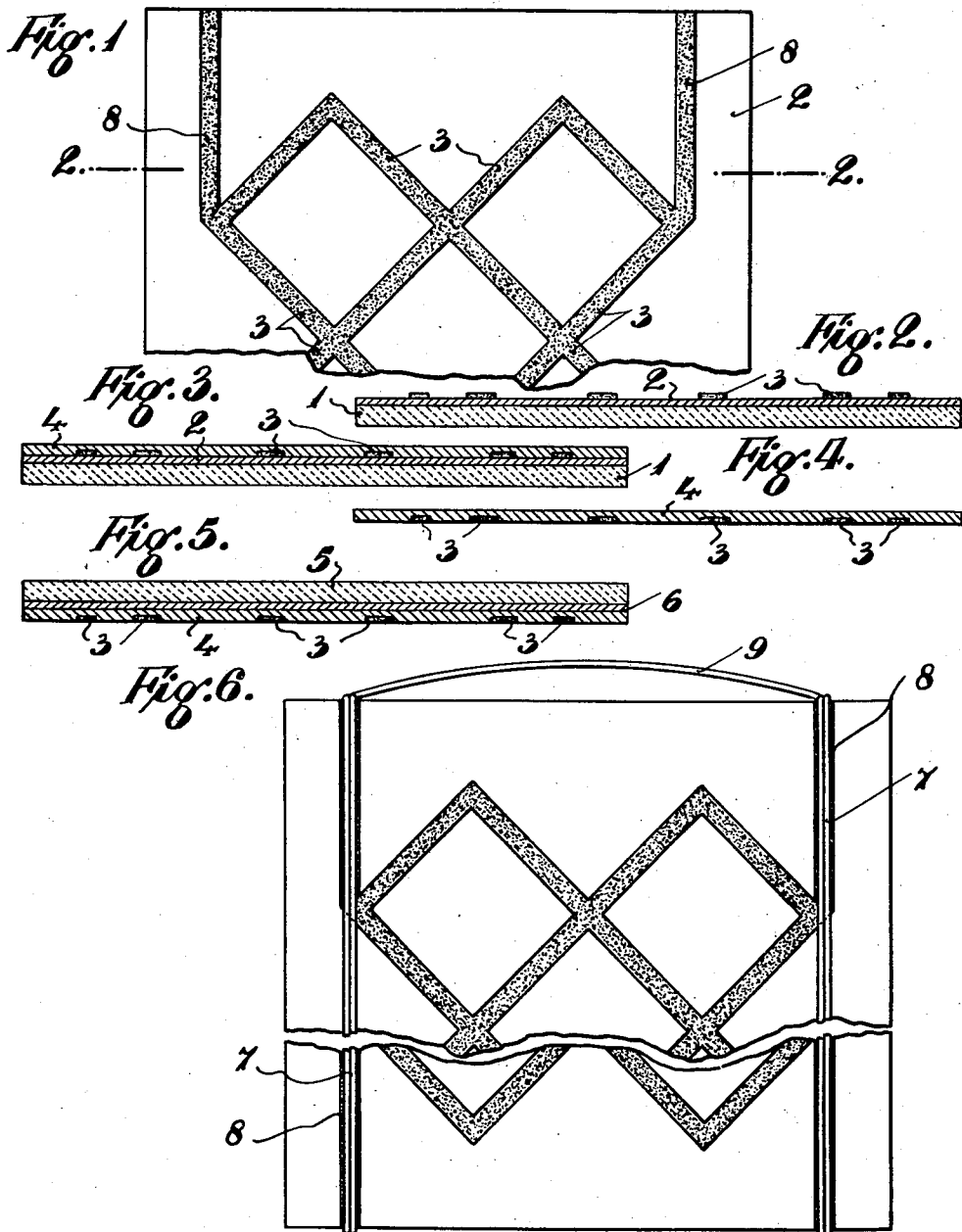
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PROCESS OF REPRODUCING DESIGNS IN METAL

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PROCESS OF REPRODUCING DESIGNS IN METAL

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This invention relates to an improved process of reproducing designs in metal by means of photography and electro-deposition.

The object of the invention is to provide a cheap and simple process whereby openwork, filigree or other ornamental designs, can be readily reproduced in metal without the use of tools and suitable, for example, for inlaid work or for pressing into wood, pottery, or non-metallic mouldable substances or articles for the purpose of ornamenting the same.

According to the invention, the improved process consists in exposing behind a transparency of the design, a photographic plate or the like coated with a soluble light-sensitized medium which permits of an electric conducting medium adhering only to unexposed portions, applying to the coating an electric conducting medium which thus adheres only to the non-exposed portion, covering the adhering conducting medium with a film or coating of a substance, such as collodion, which is not readily soluble in water and to which the said conducting medium will adhere, washing away the whole of the original soluble coating so as to leave only the conducting medium supported upon the covering film or coating in the form of the design to be reproduced, and depositing metal upon the said conducting medium by electro-deposition.

Figure 1 of the accompanying drawings is a view of the exposed photographic plate with the conducting powder applied to the non-exposed parts.

Figure 2 is a diagrammatic section on the line 2—2 of Figure 1.

Figure 3 is a similar section after the plate has been coated with collodion.

Figure 4 is a section through the collodion film with adhering conducting powder after the original sensitized film has been washed away.

Figure 5 is a section showing the collodion film applied to a supporting plate coated with adhesive.

Figure 6 is a face view of the collodion film on its supporting plate, ready for electro-deposition, showing the leads connected to the conducting powder.

In carrying out the preferred method of reproducing, for instance, an openwork design in thin metal, a photographic negative is made from a line drawing, sketch or photograph of the design to be reproduced, and from the negative a positive or transparency on a glass plate or film is printed by contact or in the camera. A glass plate 1 is then coated as shown at 2, with a solution comprising a mixture of dextrine and glucose, or with a solution of either of these substances, or with a solution of a similar or equivalent hygroscopic substance, such as gum arabic, honey, glycerine or the like, the solution being sensitized with bichromate of potash or bichromate of ammonia. The plate 1, when dry, is exposed behind the positive to a source of light, using an actinometer to judge the exposure. A finely-ground metallic powder 3 or other electric conducting powder such as carbon is then dusted over, or applied with cotton-wool or a brush to, the exposed surface of the plate, and such powder will adhere only to the parts not exposed to the light, as shown in Figures 1 and 2, thus leaving upon the surface of the coating the design to be reproduced, the same being clearly defined and depicted by the metallic powder. The plate is next coated with collodion 4 which thus covers the adhering metal design 3, as shown in Figure 3. The collodion is allowed to set but not to dry, and the plate is immersed in water so as to cause the whole of the bichromate film 2 to be washed away, thus leaving the metal design 3 adhering to and supported upon the collodion film 4, as shown in Figure 4. This film, which is thus separated from the plate 1 is transferred to another plate 5 (see Figure 5) which has been coated with gelatine or rubber-solution 6, the transfer to this plate being conveniently effected by floating the film on to the plate in water. The plate 5 with the transferred collodion film 4 bearing the metallic design 3 on its outer surface, is then allowed to dry. Suitable metallic leads 7 are connected to the metallic design (see Figure 6), and to facilitate the attachment of these leads the original design may have suitably-placed extension lines 8 (Figures 1 and 6) extending from the design

proper, these lines being reproduced by the metallic powder. The leads 7 may conveniently consist of a length of copper wire wrapped around the plate in contact with the extensions 8 at each side of the design, the middle portion of the wire forming a top loop 9 adapted to be supported upon the conducting bar of a plating vat so as to suspend the plate therein. The plate is then inserted in the plating vat, using the metallic design as the cathode, and by electro-deposition any suitable metal may be deposited upon the metallic powder in order to produce the desired design in the appropriate metal. The plate is left in the vat until the required thickness of metal has been deposited, when the plate is removed and the deposited metal design stripped off. This design is in the form of a thin openwork metal plate or layer corresponding to the original design, and can be pressed into wood, tortoise shell or any non-metallic mouldable material, or inlaid into any material, or otherwise used for ornamenting articles.

Having fully described my invention, what I desire to claim and secure by Letters Patent is:—

1. A method of reproducing designs in metal consisting in exposing behind a transparency of the design a photographic plate coated with a soluble light-sensitized medium which permits of a powdered electric conducting medium adhering only to the unexposed portion, applying to the undeveloped coating a powdered electric conducting medium so as to adhere only to the non-exposed portions, covering the adhering conducting medium with a film of a substance not readily soluble in water and to which the said conducting medium will adhere, washing away the whole of the original sensitized coating leaving only the conducting medium supported upon the covering film in the form of the design to be reproduced, and depositing metal upon the said conducting medium by electro-deposition.

2. A method of reproducing designs in metal consisting in exposing behind a transparency of the design a photographic plate coated with a hygroscopic substance sensitized with a salt sensitive to light applying to the exposed undeveloped coating a metallic powder which adheres only to the non-exposed portions in the form of the design to be reproduced, coating the adhering metallic powder with a film of liquid collodion allowing the collodion film to set, washing away the whole of the sensitized coating so as to leave the design in metallic powder upon the collodion film, and depositing metal upon the said design in metallic powder by electro-deposition.

3. A method of reproducing designs in metal consisting in exposing behind a transparency of the design a photographic plate

coated with a hygroscopic substance sensitized with a light-sensitive bichromate salt, applying to the exposed undeveloped coating a metallic powder which adheres only to the non-exposed portions in the form of the design to be reproduced, coating the adhering metallic powder with a film of liquid collodion allowing the collodion film to set, washing away the whole of the bichromate coating so as to leave the design in metallic powder upon the collodion film, transferring the collodion film to a plate covered with adhesive and allowing it to dry, depositing metal upon the said design in metallic powder by electro-deposition, and removing the deposited metal design from the film.

In testimony whereof I have affixed my signature.

FREDERICK WILLIAM MILLER.