J. A. H. HATT.

PROCESS OF PRODUCING PLANOGRAPHIC PRINTING PLATES.

APPLICATION FILED MAR. 17, 1911.

1,151,459. Patented Aug. 24, 1915.

Fig 1.



Fig. 2.

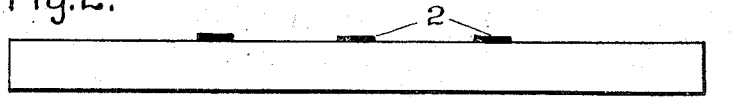


Fig. 3.

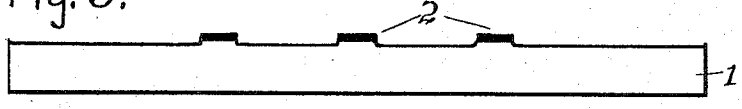
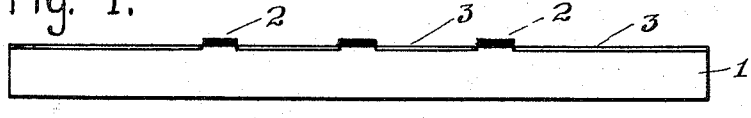


Fig. 4.



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PROCESS OF PRODUCING PLANOGRAPHIC PRINTING-PLATES.

1,151,459. Specification of Letters Patent. Patented Aug. 24, 1915.

Application filed March 17, 1911. Serial No. 615,064.

To all whom it may concern:

Be it known that I, JOSEPH ARTHUR HENRY HATT, a citizen of the United States, residing in the borough of Brooklyn, in the city and State of New York, have invented new and useful Improvements in Processes of Producing Planographic Printing-Plates, of which the following is a specification.

The invention relates to planographic printing plates and a method of producing such plates.

Objects of the invention are to produce a novel planographic printing plate having superior properties as a printing plate, and at the same time providing a plate of unusual durability, and unusual clearness and sharpness of design; and to provide such a plate which has a firm, unyielding foundation or base for the design, and which has the non-design part freely water taking. Such a plate will operate with a very light squeeze on the press, and possesses unusual ink and water taking properties upon the design and non-design parts of the plate, respectively. These and other objects of invention will appear in part more fully hereinafter, and will be in part apparent to those skilled in the art.

The invention consists in the novel parts, articles, combinations, steps, processes and improvements, herein shown and described.

The accompanying drawings are diagrammatic in character, and designed to in some degree elucidate and illustrate the process of making and the structure of plate provided by my invention.

Of the drawings: Figure 1 shows the plate without a design; Fig. 2 shows the design on the plate; Fig. 3 shows the plate with the non-design parts of the surface removed; and Fig. 4 shows the electro-deposited non-design part of the surface upon the plate.

In carrying out my invention, I take a plate of planographic metal 1, such as zinc or aluminum, having a relatively firm and compacted surface, and which surface has not been grained to prepare it to take the water and thus become ink-rejecting during the printing. The surface of the plate is smooth, or practically smooth, and is of a firm and unyielding character. Such a surface is easy to transfer to, or for the artist to work upon, affording him all the facility of the stone for erasures and changes as would be the case were he working upon stone. Such a plate also furnishes a firm foundation or base for the design, thereby producing results of very high quality. Upon this firm surface the design 2 of fatty or other design material is placed in a suitable manner as by the artist, or light or actinic action, or by transfer in the manner common in lithography. Upon the non-design portions of the plate a different character of surface is placed or prepared in a layer, which is non-compacted or granular, and which is readily water-taking and ink-rejecting. This layer in the preferred form of carrying out my process is electro-deposited upon the non-design portions after the design has been placed upon the plate as above stated.

In the accompanying dragrams I have shown and also described the non-design parts of the plate as being chemically dissolved away to a lower level, the new layer of granular structure then being deposited thereon. In accordance with certain features of the invention, however, the layer which is to constitute the non-design parts of the surface of the plate may be deposited thereon without first dissolving or lowering the level of the original plate; said layer in such case being above the level of the original plate. After the design is placed upon the surface of the plate, the design is protected by a suitable acid-resisting material, such as rosin, talc, melted dragon's blood, or other suitable resistant material. With the design so protected the plate is placed in a chemical or acid bath for the purpose of dissolving or removing the non-design portions of the surface of the plate, thus reducing said non-design portions to a slightly lower level than the design portion of the surface of the plate. This bath serves also to thoroughly clean the non-design portions of the surface of the plate, and also to grain or roughen the non-design portions of said surface to afford a good hold for the layer of granular planographic metal to be deposited thereon. The plate is removed from the chemical bath and at this stage, it will be understood, the design is carried upon the original smooth, or non-grained surface of

the plate while the non-design portions of the surface of the plate have been removed, or dissolved away. That is, the non-design portions are at a lower level than the portions of the surface of the plate upon which the design is carried, and in condition to receive and hold the layer of metal which is to be deposited thereon. The non-design portions of the surface when removed from the bath are thoroughly clean, and slightly roughened, thereby providing an excellent holding surface upon which the desired layer of metal may be electro-deposited. If it is not desired to dissolve the surface away to a lower level, the bath or its action may be modified so that said non-design portions of the plate are cleaned and somewhat roughened, but not to any appreciable extent dissolved to a lower level. In this condition, the plate is placed in an electrolytic bath and a deposit of zinc or other planographic metal, is made upon the non-design parts in a granular form. The degree of coarseness or fineness of this deposit can be regulated by the voltage of the current employed. The surface of the non-design portions of the plate can then have this electrically deposited layer built up to the desired thickness either to the height of the original surface of the plate, if desired, or if desired, a little higher still. The plate is then prepared for printing by treating it with an acid gum solution, substantially as is done with stone and metal plates, as for example with a mixed solution of chromic acid, phosphoric acid, gum arabic and water. The plate is also gummed in the usual lithographic manner. The design may be cleaned by removing the resist and old ink in a suitable manner, as by means of turpentine, when the plate may be rolled up and is then ready for printing.

What I do claim as my invention and desire to secure by Letters Patent, is:

1. The process of producing a planographic printing plate which comprises taking a metal plate having an ungrained and relatively smooth and compacted surface, placing a design upon said surface in an ink receiving material, removing the non-design portions of said plate to a lower level and covering said lowered non-design portion with granular or non-compacted metal in the solid state, to constitute the ink-rejecting and water-taking element of the printing surface.

2. The process of producing a planographic printing plate which comprises taking a metal plate having an ungrained and relatively smooth and compacted surface, placing a design upon said surface in an ink receiving material, removing the non-design portions of said plate to a lower level and covering said lowered non-design portion by electro-deposition with granular or non-compacted metal in the solid state, to constitute the ink-rejecting and water-taking element of the printing surface.

3. The process of producing a planographic printing plate which comprises taking a metal plate having an ungrained and relatively smooth and compacted surface, placing a design upon said surface in an ink receiving material, etching the surface of the non-design portions of the plate, and covering the non-design portions of said surface of the plate with a layer of granular or non-compacted metal in the solid state to constitute the ink-rejecting and water-taking element of the printing surface.

4. The process of producing a planographic printing plate which comprises taking a metal plate having an ungrained and relatively smooth and compacted surface, placing a design upon said surface in an ink receiving material, protecting said design by a resistant coating, etching the surface of the non-design portions of the plate, and electro-depositing on the non-design portions of said surface of the plate a layer of granular or non-compacted metal in the solid state to constitute the ink-rejecting and water-taking element of the printing surface.

5. The process of producing a planographic printing plate which comprises taking a metal plate having an ungrained and relatively smooth and compacted surface, placing a design upon said surface in an ink receiving material, removing the non-design portions of said plate to a lower level, roughening the surface of the non-design portions of the plate and covering said lowered and roughened non-design portion with granular or non-compacted metal in the solid state to constitute the ink-rejecting and water-taking element of th eprinting surface.

6. The process of producing a planographic printing plate which comprises taking a metal plate having an ungrained and relatively smooth and compacted surface, placing a design upon said surface in an ink receiving material, removing the non-design portions of said plate to a lower level, roughening the surface of the non-design portions of the plate and covering said lowered and roughened non-design portion by electro-deposition with granular or non-compacted metal in the solid state to constitute the ink-rejecting and water-taking element of the printing surface.

7. The process of producing a planographic printing plate which comprises taking a metal plate having an ungrained and relatively smooth and compacted surface, placing a design upon said surface in an ink-receiving material, chemically dissolving the non-design portions of said plate to a lower level and covering said lowered non-design portion by electro-deposition with granular

or non-compacted metal in the solid state, to constitute the ink-rejecting and water-taking element of the printing surface.

8. The process of producing a planographic printing plate which comprises taking a plate having a relatively dense and compacted surface and placing a design thereon and removing the non-design portions of the surface and substituting therefor a relatively granular and non-compacted surface of solid metal to constitute the non-design or moisture taking and ink-rejecting portions of the surface of the plate.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

JOSEPH ARTHUR HENRY HATT.

Witnesses:
JOHN D. MORGAN,
ROSE MENK.