

W. J. R. BARTLETT.
PROCESS FOR THE PRODUCTION OF INTAGLIO PRINTING SURFACES FOR LITHOGRAPHIC
OR ALUMINUM PRINTING.
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1,038,266.

Patented Sept. 10, 1912.

Fig. 1.

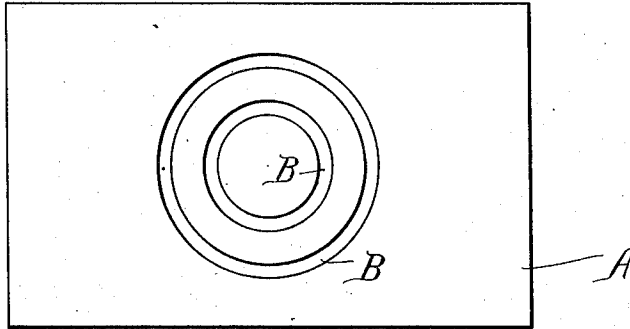


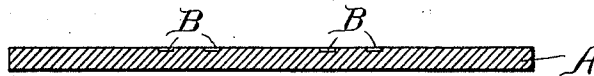
Fig. 2.



Fig. 3.



Fig. 4.



Witnesses

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PROCESS FOR THE PRODUCTION OF INTAGLIO PRINTING-SURFACES FOR LITHOGRAPHIC OR ALUMINUM PRINTING.

1,038,266.

Specification of Letters Patent.

Patented Sept. 10, 1912.

Application filed January 2, 1908. Serial No. 409,083.

To all whom it may concern:

Be it known that I, WALTER J. R. BARTLETT, a citizen of the United States, and a resident of the city of San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Processes for the Production of Intaglio Printing-Surfaces for Lithographic or Aluminum Printing, of which the following is a specification.

My invention relates to improvements in printing processes and consists of a process whereby duplicate intaglio engravings may be produced in intaglio in zinc or aluminum plates, adapted for printing from lithographic or aluminum presses by lithographic printing methods.

My invention comprises the novel steps and methods set forth in the claims.

The accompanying drawings show the conditions of a plate in the various steps of my process.

Figure 1 is a face view of a plate having an intaglio design impressed therein. Fig. 2 is a section of the same plate after being coated with the protective film. Fig. 3 is a similar section after the film has been polished or ground off down to the plane surface of the plate. Fig. 4 is a section of the finished plate.

The general steps of my invention are as follows: First, it is required to produce a cameo of an original engraving on a hardened steel plate. This cameo impression of the original is raised to the requisite height on a steel plate which is afterward hardened. The method then employed is similar to that in operation at present for procuring duplicate intaglio engravings on steel plates. The cameo impression B is sunk into a plate A of zinc or aluminum to the required depth as many times as desired, thereby causing the zinc or aluminum plates to be covered with indented or intaglio impressions of the original cameo engraving. After these duplicate cameo impressions have been made in the plate to the desired extent, the plate is entirely covered with a film C' of acid-resisting material capable of being hardened by the action of actinic rays. The preferred composition for this film is as follows: purified bitumen, 50 cc., benzole, 250 cc., chloroform, 100 cc., Venice turpentine, 5 cc. This film is flowed over the zinc or aluminum plate, completely cov-

ering its surface, including the intaglio indentations made by the original cameo. The film covered plate is then exposed to the action of actinic rays, which hardens the film surface. After this hardening action has proceeded as far as necessary, the plate is polished with a piece of flat charcoal or other suitable substance, whereby the main body of the plate surface is exposed, but leaving the depressed indentations or cameo impressions, filled with the film matter C' up to the height of the plate surface. This covering C' of bitumen, occupying the indented designs in the plate, acts as an acid resist to any mordant or chemical which may be applied to the exposed surface of the zinc or aluminum plate in order to prepare the plate for lithographic or aluminum printing purposes. After the surface of the zinc or aluminum plate has been subjected to the treatment required, it will be found necessary, in order to produce intaglio printing results, to remove the hardened film covering the depressed surfaces or indentations caused by the original cameo. This is done by flowing over the plate a solvent like chloroform, which completely removes the bitumen without destroying the effect produced upon the surface of the plate by the etching thereof for lithographic or aluminum printing purposes—that is, without destroying the effect of the etching process in making the plane surface of the plate ink-repellent, and at the same time the depressed intaglios, having been protected from such action by the bitumen film, are thereby capable of being sensitive for the retention and to the action of ink. The zinc or aluminum plate is then subjected to a covering of lithographic ink, whereby the portions of the plate that were protected from the lithographic etching treatment by the film covering of bitumen, i. e., the depressed intaglios, retain the ink, while the surfaces of the plate acted on by the etching materials are not affected thereby. The plate may then be used to print from by lithographic or aluminum printing methods.

Any acid-resisting film or substance may be employed as a covering for the depressed or intaglio portions of the plate before being polished by the charcoal. The film which I prefer is the one whose composition has been before given, having a bitumen base.

A distinctive feature of my invention is the production of intaglio printing surfaces on metals, metal compositions or substances capable of being manipulated on lithographic or aluminum presses, whereby greater speed is obtained as contrasted with the present slow methods employed in printing from copper or steel plate intaglios, where the plates require mechanical wiping off for each impression. In lithographic and aluminum printing methods no such wiping of the plates is required, which permits speed, and the resulting printing from intaglios in zinc and aluminum plates will have the raised effect combined with the greater speed. By the film of bitumen being dissolved or washed out of the depressed designs, after polishing and etching, by the solvent action of chloroform or benzole, the resulting printing from the plate may be called "lithographic intaglio printing."

The chief novel feature of my invention lies in the following: Covering the plate having the intaglio impressions therein, with a bitumen or other acid-resisting film, then exposing the body of the plate by polishing the film covered surface with charcoal or other suitable substance, leaving the film in the depressed portions constituting the designs, said remaining portions of the film being on a level with the exposed surfaces of the plate, thus protecting the intaglio designs from the etching processes, then cleaning the remaining film from the plate by using chloroform without affecting the chemical action on the plate surface caused by the etching manipulations, and also without affecting the ink-sensitiveness of the depressed surfaces formerly covered by the bitumen film.

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

1. The herein described process for the production of intaglio printing surfaces on zinc or aluminum, which consists in pressing a hardened cameo from an original engraved surface into a plate of zinc or aluminum, then covering said plate with a film of acid-resistant material capable of being hardened by the actinic action of light,

hardening said film by exposure to actinic rays, polishing the plate with charcoal or other suitable material, etching the plate surfaces thus exposed by lithographic or aluminum etching methods, dissolving out the film left in the intaglio design by the solvent action of chloroform or other suitable solvent, whereby the intaglio design may be used as an ink-retaining surface from which to print.

2. The herein process for producing duplicate printing surfaces from an original engraving which consists in sinking a hardened cameo copy of the original engraving into the surface of a plate adapted for printing by lithographic or aluminum processes, covering said plate with a film of material of an acid-resisting character, drying the same, then polishing the film covered surface with charcoal or other suitable material, thereby exposing the plane surface of said plate without removing the film from the depressed portions thereof, then etching the exposed surfaces of the plate with chemicals suited to lithographic or aluminum printing processes, then using a suitable solvent, as chloroform, or benzole, to clear off the acid-resistant film covering the depressed portions of the plate.

3. The herein described process for the production of intaglio printing surfaces adapted for use under lithographic or aluminum printing conditions, which consists in producing the design in intaglio in a plate having normally ink-attractive qualities, protecting said intaglio designs by a coating or film, treating the plane surface of the plate with an etching fluid to render the same ink-repellent without coating the material of which it is composed, and then removing the protective film from the intaglio design; thereby producing an uncoated plate with design and non-design surfaces having opposite ink-receiving qualities.

In testimony whereof, I have hereunto affixed my signature this 11th day of Dec. 1907, in the presence of two witnesses.

WALTER J. R. BARTLETT.

Witnesses:

R. R. ROBERTSON,
L. E. SEXTON.