

W. J. R. BARTLETT.
MEANS AND PROCESS FOR PRODUCING INTAGLIO PRINTING SURFACES.
APPLICATION FILED JAN. 2, 1908.

1,028,177.

Patented June 4, 1912.

Fig. 1.

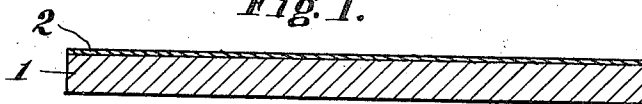


Fig. 2.

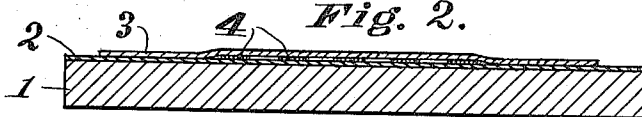
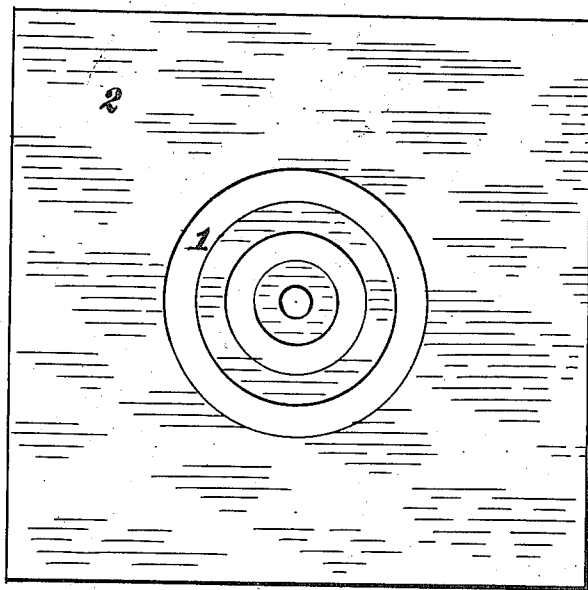


Fig. 3.



Fig. 4.



WITNESSES.

Earl Young
Chas S. Webb

INVENTOR.

Walter J.R. Bartlett.
by Henry L. Reynolds.
his attorney.

UNITED STATES PATENT OFFICE.

WALTER J. R. BARTLETT, OF SAN FRANCISCO, CALIFORNIA.

MEANS AND PROCESS FOR PRODUCING INTAGLIO PRINTING-SURFACES.

1,028,177.

Specification of Letters Patent.

Patented June 4, 1912.

Application filed January 2, 1908. Serial No. 415,443.

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 Means and Processes for Producing Intaglio Printing-Surfaces, of which the following is a specification.

My invention relates to improvements in processes and means employed in producing printing surfaces by etching, and consists of a process and means in which the protective film and the ink or like material, by which the design is outlined on the film, contain ingredients which, when brought in contact, act to change the protective character of said film.

The object of my invention is to improve and simplify intaglio etching processes.

My invention comprises the novel steps and combinations which are pointed out in the claims.

The drawings illustrate the steps employed in carrying out my invention.

Figure 1, is an edge section of a stone or plate upon which a design is to be produced, one surface being covered with a protective film. Fig. 2, shows the same with the design to be reproduced in the process of being transferred thereto. Fig. 3, is the same after the film has been removed. Fig. 4, is a face view of the stone ready for etching.

A process heretofore employed for producing printing surfaces for etching, consists in coating the surface of the block or plate selected, with an actinically sensitive film, outlining the design thereon by an opaque substance, as ink, exposing the same to actinic rays, washing or dissolving out the portions of the film which were protected from the actinic rays by the ink and then flowing with an etching fluid. My invention differs from this most noticeably in the use of a film and ink having ingredients which act to alter the protective character of the film where brought into contact. This feature may act only supplementary to the usual actinic action of light, or be relied upon chiefly or wholly, without using the actinic action at all.

Another feature of my invention consists in applying the design to the surface of the film by means of transfer impressions in a manner exactly analogous to that employed in lithography.

While I prefer to use the last feature because of its convenience and other good qualities, its use is not a strictly essential part of my invention, which consists more particularly in the alteration of the character of the film by reason of contact with the ink.

The first step in carrying out my invention is to provide a suitable film for the plate or block selected. In Fig. 1 is shown an edge view of a block 1, having a film 2, on one surface. The block 1, may be a lithographic stone, a plate of aluminum, zinc, or in fact, any material which is suitable for etching. The block or plate may have whatever preliminary treatment is desirable for blocks of that material. The film may be composed of various materials or combinations of materials such as are in common use for such purposes, as for instance, dammar varnish, beeswax, bitumen, or a solution of bitumen whose acid-resisting qualities have been improved by the actinic action of light; or it may be composed of fish glue containing a sensitive salt, as bichromate of ammonia, which is hardened or changed by actinic rays.

In connection with my invention it is presumed that an original printing surface or some means of producing the transfer impressions used, be provided. This may be an original steel or copper plate or engraving, type, or any object from which an impression may be made. With other means for transferring or placing the design upon the film even these may possibly be dispensed with.

The next step after the production of the film is to transfer thereto the design to be reproduced by means of the particular kind of ink used. The preferred way of doing this is by means of a transfer impression produced and manipulated in the same way as is an ordinary lithographic transfer impression. This consists, physically, of a piece of paper having the design produced thereon in ink; this is pressed upon the film until the ink is in intimate contact with the film, even to the minutest lines. The term ink, as herein used, is to be taken in its broad sense to mean any substance or compound of a liquid, semi-liquid or pasty character, which may be used with type or other printing surfaces for the reproduction of designs by impression, upon other surfaces, whether or not it produces color con-

trasts or has especial color characteristics. In Fig. 2 I have shown the block as having the transfer impression in place thereon, the impression consisting of the paper 3 and the ink 4. Figs. 3 and 4 show the stone or plate in condition for etching, that is, as it is after being developed or having had that portion of the film which is covered by the design washed away or otherwise removed. For convenience of illustration I have shown an extremely simple design, consisting only of concentric circles. It is not, however, to be understood that my invention is not adapted to use with complicated and delicate designs; on the contrary, it is adapted to the most delicate work. After the transfer impression has been brought into intimate contact with the film, so that the finest lines of ink have been fixed or incorporated with the film surface, the paper, which constitutes the transferring or carrying medium, is washed off or otherwise removed, leaving the ink which constitutes an exact reproduction of the primary printing surface, in place upon the film. This ink contains ingredients having characteristics which enable it to act upon the film, or ingredients contained in the film, to alter the character thereof, as by altering its acid-resisting character, its actinic sensitiveness, or in analogous manner to affect the film so as to facilitate the later treatment, whereby that portion of the film which was covered by the design in ink, may be removed to expose the material of the plate to the etching fluid.

The ink employed may be a suitable commercial ink, to which has been added a chemical or chemicals which will produce the desired alteration in the film. Such chemicals comprise salts of potassium and sodium having an alkaline reaction; also permanganate of potash which has a neutral reaction, but by heating leaves a deposit having an alkaline reaction. Various chemical solvents may be employed for this purpose. The object sought is a combination of materials in film and ink which will result, either in breaking down, softening, oxidizing or decomposing the film, to prevent the film hardening or acquiring a resistant character by the action of light or other treatment, in that portion of the film covered by the ink, or in a combination of these results. The change caused may be either independent of or supplementary to that caused by actinic rays. In other words, it substitutes in whole or in part, a chemical action between ink and film caused by actual contact, for that caused by actinic action. The ink, instead of being purely a screen for the light rays, has a direct and positive altering action upon the film independent of any action it may have as a screen. The result I have found to be more perfect and finer definition

of the lines of the design when etched on the plate.

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

1. In the preparation of plates for etching to form intaglio printing surfaces, the combination with a plate adapted, by etching treatment, to form a printing surface, of a protective film upon the surface of the plate and an ink transferred thereto in a replica of the design to be etched, said ink and film containing ingredients which, when brought into contact, react chemically by such contact to reduce the protective character of the film.

2. In the production of etched surfaces, the combination with a plate adapted for etching treatment and an acid resistant film covering the surface to be etched, of an ink used for the transfer of the design directly to the surface of said film, said ink and the film containing ingredients which, upon contact, chemically act to neutralize the acid-resistant qualities of the film.

3. The method of determining the area of a surface to be etched to form an intaglio printing surface, which consists in providing a protective film for said surface, applying to said surface a replica of the desired design in a substance which will act by contact upon the protective film to destroy its acid-resistant and protective qualities where covered thereby.

4. The method of determining the area of a surface to be etched to form an intaglio printing surface, which consists in providing an actinically sensitive protective film for said surface, applying to said film a replica of the desired design in a substance which will act upon the film to destroy its acid-resistant, actinic and protective qualities where covered thereby.

5. The method of determining the area of a surface to be etched, which consists in providing a protective film therefor having a bitumen base and actinic sensitiveness, applying to said surface a replica of the desired design in a substance which will act upon the film to destroy its acid-resisting and actinic qualities where covered thereby.

6. The herein described process for the production of intaglio printing surfaces, which consists in coating the surface of an etchable material with a protective film, incorporating the design to be produced thereon by means of a lithographic transfer impression, using ink or like substance constituted to destroy the acid-resisting qualities of said film and then etching the design into the stone or plate used.

7. The herein described process for the production of intaglio printing surfaces, which consists in coating the surface of an etchable material with a protective film hav-

ing actinic sensitiveness and acid-resisting qualities, placing the desired design in intimate contact with said film by means of lithographic transfer impressions, using therefor an ink or like substance constituted to destroy or neutralize the acid-resisting and actinic qualities of the film where in contact therewith, exposing the plate or stone being used to actinic rays, developing the stone or plate, and then etching the design into the stone or plate.

8. The herein described process for the production of etched printing surfaces, which consists in coating the surface of a stone or plate of suitable etchable material with an actinically sensitive film having a bitumen base, placing the design desired upon said film by means of a lithographic transfer impression, using an ink containing ingredients adapted to destroy the acid-resisting and actinic qualities of the film where brought into contact therewith, exposing the plate to actinic rays, developing the plate and etching the exposed design into the plate or stone.

9. The herein described process for the production of etched printing surfaces, which consists in coating the surface of a stone or plate of suitable material with a film composed substantially of purified bitumen, 45 c. c.; benzol, 350 c. c.; Venice turpentine, 5 c. c.; placing the design upon the film, using an ink containing ingredients adapted to destroy or neutralize the actinic

and acid-resisting qualities of the film where in contact therewith, subjecting the plate or stone to actinic rays, developing the plate by removing that portion beneath the design, and then etching such exposed portions of the plate.

10. The method of determining the area of a surface to be etched to form a printing surface, which consists in providing said surface with a film having latent protective qualities which may be developed actinically, applying to said film a replica of the desired design in a material which chemically acts upon the film to neutralize its latent protective qualities.

11. The method of determining the area of a surface to be etched to form a printing surface, which consists in providing said surface with a film having latent protective qualities which may be developed actinically, applying to said film a replica of the desired design in a material which acts upon the film to neutralize its latent protective qualities, and then exposing the film to the action of actinic rays.

In testimony whereof, I have hereunto affixed my signature this 11th day of December 1907, in the presence of two witnesses, at San Francisco, California.

WALTER J. R. BARTLETT.

Witnesses:

R. R. ROBERTSON,
N. E. SEXTON.