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METHOD OF PRODUCING PRINTING PLATES.

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(GRANTED UNDER THE PROVISIONS OF THE ACT OF MARCH 3, 1921, 41 STAT. L., 1313.)

To all whom it may concern:

Be it known that I, PHILIPP MÜLLER, a citizen of Germany, residing at Steglitz, near Berlin, Holsteinischestreet 29, Germany, have invented certain new and useful Improvements in a Method of Producing Printing Plates (said invention having been patented in Germany No. 303,440, application filed February 27, 1917), of which the following is a specification.

My invention relates to a new and improved method for producing photomechanical printing plates.

As is well known, photomechanical printing plates have been manufactured for many years by causing a layer of gelatine or the like, which has been rendered sensitive to light by admixture with potassium bichromate or the like, to be spread upon a suitable plate made of metal or other materials.

When gelatine or some corresponding colloid which has been rendered sensitive to light by admixture with various substances, is acted upon by light, it becomes relatively insoluble. Hence after an exposed plate has been developed and washed, the image is reproduced in a relatively insoluble gelatine layer on the metal plate. By protecting this gelatine reproduction from the action of acid preferably by impregnating it with a suitable oily transfer ink, the metal plate can be etched so that a completed printing plate is produced.

According to my improvements, the developed and washed plate is treated so as to visually reproduce all the lines, including the soft lines in the drawing or picture which it is desired to reproduce by the printing process. This is accomplished by treating the developed and washed plate which has preferably been treated so as to remove all acid therefrom, by means of a fatty coloring material contained in what may be called a "grinding" solution and which is adapted to cause the plate to receive the color at those places at which the sheet has been acted upon by the light, and according to the degree to which it has been subjected to the action of the light.

This enables the operator to check up the character of the photographic work, and the gelatine reproduction of the images becomes strongly impregnated with the ink or coloring material, so that it is protected from the action of the etching acid, and also serves to reprint the original image.

According to my invention, I preferably do not use glycerine as a carrying agent for the color because the use of glycerine will not enable all the soft lines in the picture, drawing or the like to be reproduced. This is because glycerine attacks the gelatine reproduction of the image.

I prefer to use substances having hygroscopic qualities such as concentrated solutions of the chlorides of the alkaline earth metals such as the chlorides of calcium, of magnesium, or the like.

When these concentrated solutions are used as carrying agents for the color, the plate takes up the color at the places at which it has been acted upon by the light as well as if glycerine were used, but the color is later removed in a great many places because of the etching and washing operations.

I therefore prefer to add to the concentrated solutions of the chlorides before mentioned, a solution of resins in alcohol together with a suitable quantity of a fatty or oily transfer ink or color. I have found a solution of three parts of colophony, or shellac, in forty parts by weight of alcohol to be suitable.

About two drops of hydrochloric acid may also be added to the concentrated solution of the chlorides before mentioned. This minute amount of hydrochloric acid is not necessary but does not impair the effect of the solution. The minute amount of hydrochloric acid causes the ink to adhere to the metal plate along the lines of the exposed and hardened gelatine.

The mixture thus formed is spread upon the developed plate in the usual manner by means of a sponge or the like, until the drawing or picture has a deep black color.

The use of the calcium or magnesium chloride prevents the color from separating at the gelatine sheet. In addition, the drawing, picture or the like is made visible in a durable manner so that any damaged places may be further developed. The colophony or the like, together with the reprinting colors are fixed upon the lines of the drawing, picture or the like, so that good and permanent color lines are produced.

The alcohol only serves to dissolve the resin and it is allowed to evaporate as the ink is applied.

This new process is especially advantageous when plates of zinc or aluminum are used. It is obvious that by my new and improved process, I have replaced the glycerine by a cheaper material which serves to firmly fix the color upon the developed lines of the gelatine plate. After the hardened gelatine has been thus impregnated with the ink and protected by the resin, the plate can be washed to remove the ink from the points corresponding to the dark spots of the image, and the plate can then be etched and used for printing.

I have described a preferred embodiment of my invention but it is clear that numerous changes and omissions could be made without departing from its spirit.

I claim:—

1. In the art of producing photomechanical printing plates made of metal with a colloid layer sensitive to light, those steps which consist in treating the exposed plate with an oily ink held in a solution of a chloride of an alkaline earth metal, said solution also containing a solution of a resin in a volatile solvent which is allowed to evaporate.

2. In the art of producing photomechanical printing plates made of metal with a colloid layer sensitive to light, that step which consists in impregnating the lines of colloid on the exposed plate corresponding to the bright part of the image with coloring matter and protecting said lines with a substance resistant to acid, before etching said plate.

3. A method according to claim 1, in which the resin is colophony.

In testimony whereof I hereunto affix my signature.

PHILIPP MÜLLER.