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UNITED STATES PATENT OFFICE.

FRED SASS, OF DETROIT, MICHIGAN, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO BO-ZAR ENGRAVING STUDIOS, INC., A CORPORATION OF MICHIGAN.

METHOD OF PREPARING COLOR PLATES.

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This discovery relates to improvements in color printing plates. Color printing plates as now commercially practiced is very difficult owing to the preparations which have to be made for it. Separate plates have to be made for each impression, and each of these plates has to be prepared by a highly skilled artisan. Various processes are in use for preparing these several color plates.

It is the object of the present method of color printing to materially lessen the time in preparing the plates, to afford separate color plates which cheapen the printing operation by lessening the make-ready operations, and which produce an extremely artistic and nicely color-printed picture.

The first operation is a tracing and transfer operation onto a grained receiving surface, perferably a metallic surface, such as zinc. Any suitable tracing and transfer material may be used, but I prefer to take a sheet of gelatin (a material which may be obtained at most printers' or artists' supply houses), tack it over the original drawing and then trace the outlines with a steel point. The tracing is then rubbed or filled with a suitable transfer chalk, such as dragon's blood powder. The tracing is then reversed face to face on the grained surface, preferably grained zinc. This transfer to the grained zinc is made to as many separate plates of zinc as there are coloring impressions to be made. For instance, if the usual four colors are used, yellow, blue, red and black, four separate grained zinc plates are provided with this outline that has been transferred to it from the gelatin tracing.

The next operation is the color separation which has to be made by the artist. The artist takes each of the zinc plates and fills or shades with grease crayons each plate in so far as he desires this designated color to show on the final picture.

Following this operation is an etching one. Each plate is coated with an etching solution. I find that a solution of ammonium nitrate, ammonium phosphate, calcium chloride, hydro-fluoric acid and gum water is suitable for this purpose. This solution eats through the greased crayon and fixes the shading or color. This I call "fixing" although this is sometimes spoken of as "etching" by lithographers. The plate is then washed first with turpentine and then with water and kept wet while crayon ink is rolled on it.

The next operation is the transfer operation in which any good grade of lithographic transfer paper may be used. The transfer paper is now laid over the plate and run through a hand press. This lifts up the drawing from the grained zinc plate, and particularly lifts up the grain effect, due to the use of the grained surface.

The transfer paper is then reversed on a polished zinc surface and again run through the hand press, and this transfers the drawing to the polished zinc surface. The final operation is an ordinary etching operation. The polished zinc surface is topped with powdered dragon's blood; it is then baked over a gas jet to hold the powder securely. The plate is then etched with any suitable etching solution, as for instance, nitric acid diluted with water. Any suitable plate may be used to receive the final etching. I have mentioned zinc; I also find that copper is suitable.

I have been able to make color plates which will print an unusually good color picture in about half the time that is used in the ordinary commercial color separating operations. Furthermore, I have been advised by printers that my color plates result in considerable economy in printing operations, particularly in making ready, and building up the printing surface to the correct height. The picture produced by these plates is unusually attractive there being throughout the picture a grained effect due to the initial grained zinc surface used, which is very pleasing to the eye.

It will be obvious that my process can be used in black or only one color and hence some of the claims are not limited to color separation.

In some of the claims appended hereto, the word "transferring" is used in describing that step in the method where the image on the etched plate is conveyed to a final printing surface. In this connection, the word "transferring" is used in its ordinary and generally accepted meaning, in that by reason of this step the image which is on the etched plate appears on the final printing surface.

What I claim is:

1. The method of preparing printing plates, which comprises tracing the outlines and transferring them to a separate surface, filling with a shading material, etching the

surface after treating with the filling or shading material, then transferring each drawing for each color from such etched surface to a final printing surface and etching the same upon such final surface in relief.

2. The method of preparing color printing plates, which comprises tracing the outlines and transferring them to separate grained surfaces, one for each color, making the color separations with a suitable filling or shading material, fixing the surface after treating with the filling or shading material, then transferring each drawing for each color to a final printing surface upon which the same is etched in relief.

3. The method of preparing color printing plates, which comprises tracing the outlines and transferring them to separate grained zinc surfaces, one for each color, making the color separations with a suitable greased crayon, etching the surface after treating with the crayon then transferring each drawing for each color to a final printing surface upon which the same is etched in relief.

4. The method of preparing color printing plates, which comprises tracing a drawing or picture on a sheet of gelatin, then transferring the outline by means of filling the tracing with chalk to a separate plate one for each color, filling in each plate with a grease crayon in accordance with the color showing desired of the plate, then transferring the prepared surface of each plate to a final printing plate on which it is permanently engraved.

5. The method of preparing color printing plates which comprises tracing a drawing or picture on a sheet of gelatin, then transferring the outline by means of filling the tracing with chalk to a separate grained metal plate one for each color, filling in each plate with a grease crayon in accordance with the color showing desired of the plate, then transferring the prepared surface of each plate to a final printing plate on which it is permanently engraved.

6. In a method of preparing color printing plates the steps which comprise filling separate plates bearing registering outlines with material to represent the color separation on each plate, then fixing the same and rolling it up with an ink, then applying transfer paper and transferring the prepared surface on the plate to the final printing surface one for each color and etching such plate in relief.

7. In a method of preparing color printing plates, the steps which comprise preparing registering outlines on separate plates one for each color, filling the plates with grease crayon in accordance with the color separation desired, coating the same with a fixing solution and then washing the plate and rolling up with a crayon ink, and then transferring the prepared surface by means of transfer paper to the final printing plate and etching the same in relief.

8. In a method of preparing printing plates, the steps which comprise the preparing of a grained metal plate with an outline, filling this up with grease crayon in accordance, and then transferring the prepared surface to a polished metal plate to form the finished printing plate and duly etching the same in relief.

9. In a method of preparing printing plates, the steps which comprise preparing a separate metal plate with an outline, filling up the same with grease crayon, coating the plate with a fixing solution, washing it and then rolling up with crayon ink, then applying a transfer paper and transferring the prepared surface to a polished metal printing plate, and then etching the same in relief.

10. In a method of preparing a printing plate, the steps which comprise preparing a metal plate with outlines, filling up the same with grease crayon, coating each plate with a fixing solution, then transferring the prepared surface to a polished metal printing plate and then etching the same in relief.

In testimony whereof I have affixed my signature.

FRED SASS.