Nov. 6, 1934. B. J. LEWIS 1,980,069

PROCESS AND PLATE FOR COLOR PRINTING

Filed Dec. 24, 1930

Fig. 1

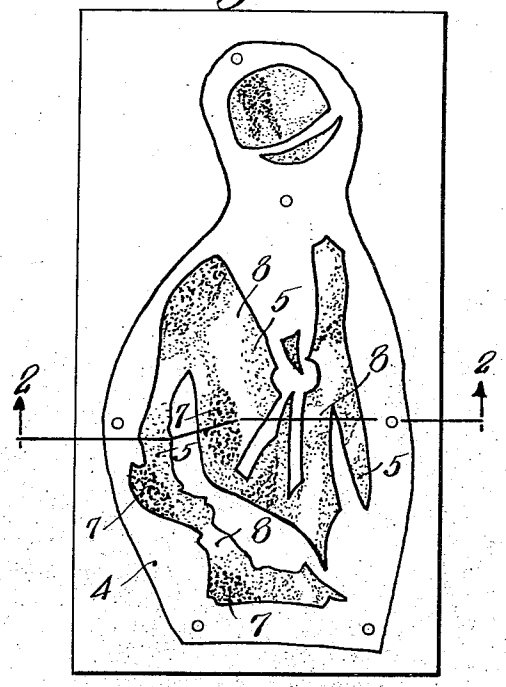


Fig. 2

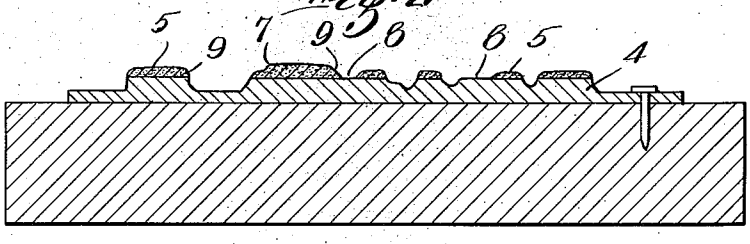
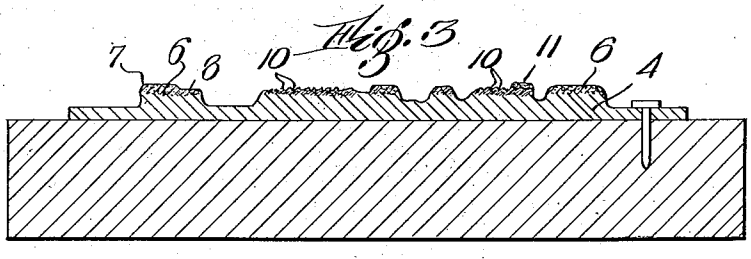


Fig. 3



Inventor
Barnard J. Lewis
By Henry C. Thomson
his Attorney.

Patented Nov. 6, 1934 1,980,069

UNITED STATES PATENT OFFICE

1,980,069

PROCESS AND PLATE FOR COLOR PRINTING

Barnard J. Lewis, Brookline, Mass.

Application December 24, 1930, Serial No. 504,645

14 Claims. (Cl. 101—401.1)

This invention relates to the art of printing, and pertains more particularly to improvements in methods of preparing a plate for color printing and in the construction of the finished plate. The principal purpose of the invention is to provide a simple and practical method and efficient apparatus for producing a colored print in which the various colors exhibit the full tone values, pleasing tonal shadings and other technical effects heretofore characteristic of hand work.

This application is a continuation in part of my copending application Serial No. 334,186, filed January 22, 1929; and in respect to the particular subject matter covered by said allowed application, it constitutes a renewal thereof. The present invention represents a desirable development of my original process, and includes several new and meritorious features which are hereinafter described and pointed out in the appended claims.

My invention may be suitably used with either intaglio or letter press printing processes, and is adapted to produce either water color or varnish color prints, it being understood that the finished prints are produced by utilizing the improved plates prepared in accordance with my methods and thence following the usual processes of printing from such plates upon suitable paper. Several unique and heretofore unattained effects result from the use of my invention; for example, the color prints are characterized by the absence of sharply defined dots or prominent lines (which are characteristic of prints produced by the so-called three or four color processes through the utilization of halftone plates), by gradual color shading, or by faint outlines, wherever such effects are desired. Because of these and many other desirable effects which my process permits, the resulting print simulates very closely the full color tones and technical shadings of a hand colored picture, and so far as I am aware such a result has not heretofore been attained by mechanical printing processes.

My process and my improved plate are susceptible of several desirable variations and modifications, some of which are hereinafter explained, but it will be understood that my invention is not intended to be limited to specific details of the present disclosure, except as it may be defined in the appended claims.

In the accompanying drawing illustrating optional forms of plates prepared in accordance with this invention,

Fig. 1 is a plan view of the improved plate;

Fig. 2 is an enlarged section on line 2—2 of Fig. 1 showing one mode of preparing the printing surface; and

Fig. 3 is a similar view illustrating a modified treatment of the printing surface.

In carrying out my improved method, I may employ a base 4 of metal, wood, fibre board or other suitable sheet material which, when treated in accordance with my invention, is adapted to provide a printing plate. The surface which is to be treated may be flat and smooth, rough and irregular, or regularly uneven in the manner of an engraved plate or electrotype; for the ultimate printing surface may consist of the hardened coating medium which is applied upon one face of the base material or plate (either as a complete covering or at selected areas) and which will fill any depressions or irregularities in said face if so desired. When I use previously engraved plates or electrotypes for further treatment by my process, I may partially or completely fill selected valleys or hollows or coat other portions of the plate with my coating medium, thereby subduing or eliminating the prominence of the raised dots, ridges or lines.

The coating medium consists essentially of a resinous substance which will adhere in the form of a hardened coating to the surface of the base plate. In one aspect of my invention (Fig. 2) the medium 5 may be a viscous solution, for example varnish lacquer or shellac, which may be flowed, sprayed, wiped, brushed, or moulded upon the base plate and which dries hard upon its surface upon evaporation of its solvent; in another aspect (Fig. 3) the medium 6 may be applied in a dry state, for example in the form of powdered resin, and fused upon the base plate by heating it with a blow torch or in any other suitable manner which results in the melting and adhesion of the dry particles to each other and to the plate surface. These alternative practices may be combined, if desired, in either selected order, to produce specific effects which are mentioned hereinafter.

In order to produce variations in color intensity and the desirable tonal shadings of the colored print, the areas thus coated are further treated to produce variations in the level of the printing surface. This may be accomplished either by adding local applications of the toning medium to build up the coated surface as at 7, by removing portions of the coating previously applied as at 8, or by adopting both measures, thereby to produce hills and valleys in the ultimate printing surface. One or more sub-

stantially level, primary coats of the medium may be applied before such final treatment, and it will be understood that each coating of the viscous shellac or varnish is allowed to dry and harden before the next coat or further local applications are applied. If portions of such coats are to be removed, the material may be wiped or brushed away before hardening, if desired; or the hardened coat may be scraped or ground off locally or treated with a suitable solvent to furnish the valleys which are desired.

It is evident that the brushing or wriping operations may be performed before the coating has completely hardened or while the surface of the hard coating is temporarily softened by the application of a suitable solvent, and that the use of a stiff brush or a piece of coarse textile fabric, or even the finger, produces definite but irregular lines or rough surface areas when the coating re-hardens after brushing or wiping in this manner. These irregular variations in the printing surface enhance rather than impair the apperance of the resulting print for they further assist in imparting the desired brush-tone values which are intended to represent the hand work of the artist.

The slopes 9 of the hills or raised portions thus created may be abrupt or gradual according to the effect desired, and the resulting print will exhibit color intensities and tonal shadings corresponding to the level variations and the degree of slope of the graduated printing surface. Hence, the water colors or varnish inks which are applied to the printing surface of the improved plate and impressed upon the paper in accordance with usual printing practice, exhibit the characteristic and effective features of hand paintings, particularly the full tone values and soft shadings of actual brush work.

A further characteristic of hand work is particularly noticeable when the coating medium is applied in a dry state and fused as aforesaid. In case the heat applied to the shellac powder is not too intense or is applied only a short time, the powder does not completely melt and run together, but adheres to the base material or plate in the form of finely divided granules, as shown at 10, Fig. 3. A printed impression of such a surface (suitably colored in printing) closely simulates hand pastel or crayon effects; and the print is therefore peculiarly attractive and unique. Obviously, the heat treatment of the dry medium may be regulated to emphasize or subdue this characteristic feature, either locally or over the entire printing surface. It is also apparent that the crayon effect may be associated with the brush-tone values produced by the completely fused dry medium or by complemental coatings of the viscous shellac, as indicated at 11.

As indicated above, my toning medium may be applied either in a dry or viscous state as a coating upon a base plate or printing plate of any suitable material, and it is apparent that the printing plate may be flat or curved according to the type of press employed for printing. The particular design which is to be printed may be initially outlined upon the plate, in which case the coating may be applied to the outlined areas of the plate; or, after applying one or two coats of the medium, the surplus ground of the hardened primary coat may be routed out or tooled away in the usual manner, after the desired image is impressed of "proofed" thereon. Thereafter, the brush tone values may be provided by building up or removing local areas of the printing surface; and it is apparent that portions of the coating medium may be completely removed to expose the surface of the base plate, if desired.

Although I have found that a solution of clear Chinese lacquer tree rosin, barium and india rubber is particularly suitable as a coating medium when applied in a viscous state, other shellacs, varnishes or lacquers may be employed in carrying out my invention; and the thickness of the coating or coatings, the desirable differences in level variations of the printing surface and other details of my process, are best determined by experiment in order to secure the particular effect which may be desired.

I claim:

1. A process of preparing a printing plate, which consists in coating the surface of the plate at predetermined areas with a viscous, hard-drying medium to produce variations in the level of the printing surface, whereby the resulting print exhibits tonal values corresponding to said level variations.

2. A process of preparing a printing plate, which consists of applying and adhering coating to the surface of the plate, and producing variations in the thickness of said coating, whereby the resulting print exhibits tonal values corresponding to said variations in thickness.

3. A process of preparing a printing plate for color printing, which consists in applying a coating of adhering medium to the surface of the plate, and building up said coating by additional local applications of said medium to produce variations in the level of the printing surface, whereby the resulting print exhibits gradations in color intensity corresponding to said level variations.

4. A process of preparing a printing plate for color printing, which consists in applying a coating of an adhering medium to the surface of the plate, and removing portions of said coating to produce variations in the level of the printing surface, whereby the resulting print exhibits gradations in color intensity corresponding to said level variations.

5. A process of preparing a printing plate for color printing, which consists in coating the surface of the plate with a viscous, hard-drying medium, and building up portions of said coating by local applications of the mediums to produce hills and valleys in the printing surface, whereby the resulting print exhibits tonal values corresponding in shading and intensity to said hills and valleys.

6. A process of preparing a printing plate for color printing, which consists in coating the surface of the plate with a viscous, hard-drying medium, removing portions of the coating while soft, and building up other portions of the hardened coating by local applications of the medium, to produce hills and valleys in the printing surface, whereby the resulting print exhibits tonal values corresponding in shading and intensity to said hills and valleys.

7. A process of preparing a printing plate for color printing, which consists in fusing a granular coating medium upon the surface of the plate, and producing variations in the thickness of the fused coating, whereby the resulting print exhibits tonal values corresponding to said variations in thickness.

8. A process of preparing a printing plate

which consists in fusing a granular resinous coating medium to the printing surface of the plate at predetermined areas so that the particles adhere to each other and to the printing surface, whereby the resulting print exhibits tonal effects corresponding to said areas.

9. A process of preparing a printing plate, which consists in applying a granular, resinous medium to the surface of the plate, fusing the medium to the plate by the application of directed heat effective with varying intensity at different portions of the medium, thereby to cause variations in the degree of fusion of the particles, whereby the resulting print exhibits tonal effects corresponding to said variations.

10. A process of preparing a printing plate for color printing, which consists in applying an adhering coating to selected areas of the printing surface of the plate, and varying the surface level of the coating by brushing it while the coating is soft, so that a print taken from such uneven surfaces exhibits tonal values correresponding to said level variations.

11. A process of preparing a printing plate for color printing, which consists in applying an adhering coating to selected areas of the printing surface of the plate, and varying the surface level of the coating by wiping it while the coating is soft, so that a print taken from such uneven surfaces exhibits tonal values corresponding to said level variations.

12. A process of preparing a printing plate for color printing which consists in applying a granular coating medium to selected areas of the printing surface of the plate, and fusing said granular mediums to the plate by applying heat with varying intensity at predetermined portions of said medium, thereby to vary the character of the printing surface so that the resulting print exhibits tonal effects corresponding to said variations in the printing surface.

13. A printing plate comprising a base member, and a coating of hardened resinous material adhering to a selected portion of the plate, said coating constituting a part of the printing surface and being capable while soft of deformation by brushing its surface, said surface having irregular depressions and elevations adapted to impart gradations in color intensity to the resulting print.

14. A printing plate for color printing comprising a base member and local coatings of a hardened resinous material applied to selected areas of the base member, certain of said coatings having a thickness differing appreciably from that of other coatings and the surface of certain of the individual coatings having irregular depressions therein, said coatings constituting the printing surface of the plate and being deformable, and removable from the base member.

BARNARD J. LEWIS.