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LITHOGRAPHIC PROCESS

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This invention relates to lithography and more particularly to lithographic press plates and the preparation thereof.

Photolithographic printing plates or press plates are commonly formed of aluminum or zinc coated on one side with a light-sensitive bichromated albumen. In preparing such a plate for printing, this coating is exposed to light through a suitable negative of the image which it is desired to print, the light rendering insoluble that portion of the coating exposed to it. The coating is then covered with greasy ink and the plate washed to remove the unaffected coating leaving the ink retaining surface corresponding to the image to be printed. The plate is then ready for printing and is secured to a suitable press for the printing operation in the usual way.

A serious drawback to this process is the length of time necessary to properly prepare such a plate, and the resulting inability to make a plate by projecting light through a negative spaced from the plate, as, for example, in making an enlarged image. Because of the fact that the albumen coating reacts so slowly to the light that a considerable time is required to obtain the necessary exposure, vibration, which is present in all modern buildings, seriously affects the sharpness of the image in the case of projected light.

An object of this invention is to provide a process of making lithographic printing plates which will greatly expedite the manufacture thereof, which can be carried out with standard apparatus such as is now in use and by relatively unskilled labor.

A further object is to provide an improved form of photolithographic press plate.

These and other objects which will be apparent to those skilled in this particular art are accomplished by means of the present invention, a preferred and practical mode of which is hereinafter described.

In carrying out the present invention, a photolithographic plate is formed of celluloid or some equivalent transparent or translucent material, and is grained on one face to provide a surface capable of retaining a coating of light-sensitive material thereon. The grained surface is then coated with an emulsion of soft, water-soluble gelatin which carries a sufficient amount of silver to make it properly sensitive to light. The celluloid plate is of a size to carry the complete image or design to be printed.

A suitable negative of the image or pattern to be printed is then formed, which negative may be made on wet plate, dry plate, film, paper or other transparent medium, and may consist of all or any part of the image or pattern. It is made in a convenient size and placed in a projection or enlargement camera. The position of the negative in the camera is reversed and the reversed image is projected on to the back or uncoated side of the transparent press plate, the light passing through such plate and affecting the surface of the coating directly adjacent the celluloid plate. The exposure is made in every way similar to ordinary photographic enlargements. The reaction of the silver sensitized gelatin is very rapid and the ordinary exposure will usually require a relatively few seconds.

After suitable exposure the plate is developed in a tanning solution to render that part of the coating acted upon by the light, which constitutes the image to be printed, insoluble in water, the remaining portions of the coating which have not been affected by light remaining soluble. After developing, the plate is dried and the coated surface is covered completely with a thin coating of suitable lithographic ink. It is then washed, until that part of the emulsion or coating which has remained soluble is dissolved off the plate surface leaving the ink retaining portions of the coating which correspond to the design or image to be printed.

The result is the provision of a celluloid press or transfer plate which is clamped in the press and employed in the printing process in the same way that the aluminum or zinc plates are now employed. It will be apparent that the present process is applicable to the manufacture of plates from celluloid or equivalent materials such, for example, as cellophane, or tne like, and it will be understood that where I use the term celluloid I intend to cover such equivalent materials.

The present process renders possible the manufacture of lithographic printing plates by photographic projection from negatives of the same or different size, while reducing the time of exposure to such an extent as to eliminate the vibration factor and to greatly reduce the cost per plate.

I claim as my invention:

1. The process of forming a photolithographic printing plate which comprises providing a celluloid plate coated on one side with a soft water-soluble light-sensitive silver gelatin, exposing the face of said gelatin adjacent the celluloid to light projected through a negative and through said celluloid plate to form an image-printing surface

on said plate in substantially the plane of the celluloid, developing the exposed plate to render the light-affected image-printing portion insoluble, inking said coating to render the image-printing portion receptive to ink and repellent to moisture, and washing the plate to remove the soluble portion of the coating therefrom and expose the celluloid to form an ink-repelling moisture-retaining surface, whereby upon drying a lithographic printing surface is formed.

2. A lithographic printing plate formed of celluloid and having a lithographic printing surface on one side, on which a non-image ink-repelling portion is formed by the celluloid surface, and the ink-retaining image-printing portion is formed by a light-affected gelatin surface substantially in the plane of the celluloid surface.

3. A lithographic printing plate formed of celluloid and having a lithographic printing surface on one side, on which a non-image ink-repelling portion is formed by an etched portion of the celluloid surface, and the ink-retaining image-printing portion is formed by a light-affected gelatin surface substantially in the plane of the celluloid surface.

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