

UNITED STATES PATENT OFFICE

2,143,995

METHOD OF PRODUCING A COLLOID
RELIEF ON A NICKEL SURFACE

Charles Edmund Meulendyke, Rochester, N. Y.

No Drawing. Application March 22, 1938,
Serial No. 197,410

5 Claims. (Cl. 95-5.7)

This invention relates to the production of a colloid relief from an exposed and developed image in a silver halide emulsion layer directly supported on a nickel surface. More particularly it relates to the step in which the colloid is locally hardened under the selective control of the developed silver image.

Reference is made to the invention of R. E. Hurst and C. E. Meulendyke (U. S. 1,938,291). In one form of this invention a photo-mechanical line or half-tone printing plate is prepared by coating a silver halide emulsion upon a metallic sheet such as a copper base electroplated with a nickel layer inert to the emulsion coated thereon. After exposure and development of the silver image, a solution containing a bichromate is used to locally indurate the colloid contiguous to the developed silver particles. Treatment with warm water then removes the soluble emulsion thus forming a colloid relief. In order to secure clean and easy etching of the nickel it is necessary that the nickel areas to be etched should be clean, bared nickel. With use of the bichromate bath recommended in U. S. Patent 1,938,291 consisting of a bichromate in conjunction with a bromide, I have found that a thin layer of emulsion, corresponding to what is known as "scum" in the trade, remains over the nickel preventing satisfactory etching. Likewise I have found that recommended bichromate bleaches and that a solution of bichromate alone produces this same troublesome "scum" on the nickel. While a nickel surface in other respects is a most favorable form for the application of U. S. Patent 1,938,291, the layer of "scum" over the nickel areas to be etched has hitherto effectively prohibited the practical use of such material.

I have found that treatment with a solution containing a chloride in addition to the bichromate will produce a clean nickel surface entirely free from this troublesome "scum". The improved feature of this invention consists in the use of a solution of bichromate combined with a chloride. This improvement gives practical value to the use of a nickel surface for etching purposes in accordance with U. S. Patent 1,938,291. Within the meaning of this invention I mean to include any silver halide emulsion including chloride and bromochloride. Also I intend to include not only gelatin but other equivalent colloids such as glue and gum arabic. Also I intend to include any form of bichromate or of chloride, and the use of bichromate and chloride alone or in conjunction with other materials. Also I intend to include not only a pure nickel surface but any suitable nickel alloy surface as well.

As a specific example I recommend a water solution of 2% ammonium bichromate and .5% potassium chloride. The emulsion is preferably

a bromochloride high in chloride content. The developed silver image is preferably treated for five minutes to this solution, after which the colloid relief is developed in warm water.

It will thus be seen that I have described processes with all necessary details embodying the principles and attaining the objects and advantages of the invention. Since many matters of treatment, manipulation, selection and proportion of ingredients, succession of steps, and other details may be variously modified without departing from the principles involved, I do not intend any limitation to such details excepting so far as set forth in the appended claims.

What is claimed is:

1. In the art of photo-mechanical printing the method of producing a colloid relief from an exposed and developed silver halide emulsion layer directly supported upon a nickel surface including the steps of rendering the colloid insoluble under the selective control of the silver image in a suitable solution including a bichromate and a chloride, and dissolving out the soluble colloid.

2. In the art of photo-mechanical printing the method of producing a colloid relief from an exposed and developed silver chloride or bromochloride emulsion layer directly supported upon a nickel surface including the steps of rendering the colloid insoluble under the selective control of the silver image in a suitable solution including a bichromate and a chloride, and dissolving out the soluble colloid.

3. In the art of photo-mechanical printing the method of producing a colloid relief from an exposed and developed silver halide emulsion layer directly supported upon a suitable nickel alloy surface including the steps of rendering the colloid insoluble under the selective control of the silver image in a suitable solution including a bichromate and a chloride, and dissolving out the soluble colloid.

4. In the art of photo-mechanical printing the method of producing a colloid relief from an exposed and developed silver halide emulsion layer directly supported upon a nickel surface including the steps of rendering the colloid insoluble under the selective control of the silver image in a suitable solution including 2% of ammonium bichromate and .5% potassium chloride, and dissolving out the soluble colloid.

5. In the art of photo-mechanical printing the method of producing a printing plate from an exposed and developed silver halide emulsion layer directly supported upon a nickel surface including the steps of rendering the colloid insoluble under the selective control of the silver image in a suitable solution including a bichromate and a chloride, dissolving out the soluble colloid, and etching the bared nickel areas.

CHARLES EDMUND MEULENDYKE.