

UNITED STATES PATENT OFFICE

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METHOD OF REMOVING IMAGES FROM PLANOGRAPHIC PLATES

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1 Claim. (Cl. 41—41.5)

This invention relates to a method of removing a printing image from a lithographic or planographic printing plate without destroying the grain of the plate. The invention is applicable to aluminum, copper, stainless steel and chromium surfaced lithographic plates, but the disclosure herein is made primarily in relation to aluminum plates, because of their current prevalence in the art.

In the past, it has been conventional to remove light-hardened albuminous or other colloidal, resinous or greasy printing images from lithographic plates by washing the plates first with an appropriate solvent, then regaining the plate in the presence of an aqueous solution of an alkaline material, such as trisodium phosphate. The use of the solvent accomplished the removal of the resinous materials, grease and ink, and the alkaline solution swelled and softened the albuminous image to an extent that facilitated its removal by the graining abrasive.

In the case of zinc plates most of the albuminous image could be removed before regaining by treatment with a strong alkaline solution such as a 20 per cent caustic soda solution. However, the plates required subsequent graining to remove the last traces of albuminous material. Aluminum plates, being highly sensitive to alkalis, could not be treated in this manner with strong alkaline solutions, and only a low concentration of alkali could be used to swell the albuminous image substance and facilitate its removal by the graining abrasive.

When planographic plates are used for relatively short runs, in which little or no wear of the surface grain occurs, it is desirable to remove the old image and apply a new one without the expensive regaining operation. However, no practical method of doing this has heretofore been available.

The object of this invention is to provide a method and a reagent for removing a printing image, such as a light-hardened albuminous printing image or an image produced by hand transferring or other lithographic methods, from an aluminum lithographic plate without destroying its grain, so that the plate is in condition to receive a new image without being regained.

I have discovered that albuminous and other colloidal, resinous or greasy printing images may be removed from aluminum plates without disturbing the graining of them, by treating the plates with sulfuric or phosphoric acids or a mixture of them in the presence of chromic acid. The latter may be added to the sulfuric or phosphoric acids or formed therein by the action of the stronger acid on chromic acid salts such as potassium dichromate. Though sulfuric and phosphoric acid may be used in combination or interchangeably, I recommend the use of sulfuric acid because it is more active and less expensive. The solutions of the type disclosed readily remove the albuminous or other image from an aluminum lithographic plate without appreciably injuring the grain of it.

It is believed that the principle of this process is that the mixture of sulfuric or phosphoric acid with chromic acid, oxidizes and disintegrates the organic substances which compose the printing image so that their adhesion to the plate is destroyed, and they may therefore be readily washed from the plate, the chromic acid serving in addition to inhibit or retard the action of the sulfuric or phosphoric acids on the aluminum itself.

In practicing the invention, the lithographic plate, after it is removed from the press on which it has been operating, is first washed thoroughly with an ink solvent to remove all of the ink and grease from the surface of the plate. Next, the plate is treated with a reagent which consists of the strong mineral acid and the inorganic inhibitor. The plate is then washed with water to remove all traces of the acid, and dried.

Example

One reagent suitable for removing the light-hardened albuminous and other colloidal, resinous, or greasy printing images is: approximately one to five grams chromic acid to approximately 100 cc. 96% sulfuric acid. The proportions of sulfuric acid or phosphoric acid to chromic acid are not critical, but best results may be most economically obtained by utilizing a major proportion of the sulfuric or phosphoric acid and a minor proportion of the chromic acid.

Such reagents are also suitable for removing light-hardened albuminous and other colloidal, resinous or greasy printing images from copper, nickel, stainless steel and chromium surfaced lithographic plates. By the use of the method and a reagent of the type disclosed, light-hardened albuminous printing images or other printing images constituted by analogous colloidal substances may be removed from lithographic plates without destroying or impairing the effectiveness of the plate grain to an extent requiring regaining before forming a new printing image on the surface of the plate. Consequently

CrO₃
H₂SO₄

the expenses, labor, and time required for re-graining are avoided.

Having described my invention, I desire to be limited only by the following claim:

The method, which comprises treating a
grained aluminum lithographic plate with a
light-hardened albuminous or other colloidal,
resinous or greasy printing image, printing with
the plate, removing the image of the plate with-
out destroying the grain thereon, by washing the
plate with a composition comprised of a major
proportion of an acid of the class consisting of

5 phosphoric and sulfuric, and a minor propor-
tion of chromic acid, then providing another
light-hardened albuminous or other colloidal,
greasy resinous image upon the plate, printing
with the plate, and subsequently removing the
printing image from the plate by washing it
again with said composition, each washing treat-
ment being characterized in that it affects re-
moval of the image without appreciably injur-
10 ing the grain surface of the aluminum plate.

ANTHONY GEORGE.