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PROCESS FOR APPLYING SILVER HALIDE COLLOID LAYERS WITHOUT DISTORTION ON FUTURE PRINTING FORMS

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When it is absolutely necessary in the production of etched printing forms or of gelatine relief printing forms that—as for instance in polychrome intaglio printing—the said forms are of a perfectly accurate size, it is usual to transfer the copies of the original upon chromate-pigment paper in a dry condition onto the metal of the printing form and during this transferring action to introduce only very small quantities of moisture between the metal and the pigment paper merely sufficient for making the gelatine stick, but not enough to cause the pigment paper to be shifted.

If it is desired to employ instead of the chromate pigment process hitherto used, the silver bromide pigment process known in itself, it will not be possible to use the dry transfer method briefly described above without taking any further steps. In this case, in proportion to the exposure, there is at first no hardened image, but only a latent image which may be developed by a reducing developer and—if this has not already been accomplished by a special development (e. g. with a sulphite-free dihydroxybenzene-developer)—is to be changed into a hardened gelatine image by an after treatment (for instance conversion of the silver as with the bromine oil printing process).

It is unavoidable that during this process the silver halide layers used for the purpose are exposed to the action of liquids during a shorter or longer period, which causes a distortion and generally a stretching of the image.

It is the purpose of the present invention to obviate this drawback and to produce various forms of silver bromide pigment paper by means of which the process may be carried out.

According to this process suitable silver halide colloid layers, e. g. silver bromide pigment layers are transferred in a known manner onto the future printing form after exposure, and before they are able to become distorted by absorption of water and only reducingly developed and further treated, if needed on the said form. In order to render it possible to process in this way, the liquids for development and further treatment must be able to penetrate into the former upper side of the layer which now lies on the future printing form. This is not possible with the dense, well sized raw paper which usually serves as a carrier for pigment or silver bromide layers. For this reason when carrying out the present process, novel forms of silver halide layers are now employed, which layers immediately allow the treating liquids (developers etc.) to penetrate, or which obtain this property by a suitable treatment.

According to the invention it is possible to solve this problem in different manners. Either no carrier is present at all in which case therefore the silver halide containing colloid layer has the form of a film of sufficient thickness, for instance of gelatine, or, as with the usual pigment paper, there is a paper carrier for the layer, but this paper is not sized and is porous (e. g. blotting paper), or the paper in itself is substantially no more permeable than the usual paper, but there is provided between the silver halide colloid layer (generally a silver bromide pigment layer) and the paper an intermediate layer.

The said layer is soluble in cold water (for instance made of gum arabic, albumen or the like) which layer admits of a withdrawal of the paper, in the same manner as the ordinary transfer prints without the essential light sensitive layer which contains the latent image, being dissolved.

All three of these types are transferred in a substantially dry condition to the future printing form in the manner described above, which hitherto has only been known for exposed chromate pigment papers, and after the layer has fixed itself on the form by suction, either developed with a hardening developer in a known manner (for instance by means of a sulphite free dihydroxybenzene developer) or first developed without hardening and later on subjected to a treatment by means of which a hardening of the colloid is effected at the silver containing parts of the image (for instance a treatment with an ozobromide or bromine oil bath). If no carrier, or a carrier permeable by water is present, this may be done immediately after the transfer, otherwise the carrier is loosened first which succeeds without difficulty on account of the intermediate layer which is soluble in cold water.

It is especially advantageous to employ for the moistening for affixing the pigment paper on the printing form either the complete developer to be used later on, or some constituents of the same; in the latter case the developing is accomplished very rapidly, since part of the developing substance is then already present in the gelatine layer.

It is best to use for moistening purposes only the alkali constituent of the developer, for instance generally a potash solution.

The layer will then adhere perfectly, development is accelerated very much, since nearly the

entire alkali constituent of the developer is then already introduced into the layer merely by moistening the same; developing troubles on account of a premature oxidation of the developer are prevented very effectively, since the developer constituents which are subject to oxidation are introduced into the layer and come into contact with the atmosphere only during the very rapid development; after the gelatine image has been transferred to the printing form developed, hardened and if needed washed with warm water, the gelatine relief thus produced will either serve as an etching image for etching the printing form by means of acid or other usual etching agents, or else the gelatine relief itself may be used for printing; for this purpose printing ink is absorbed by the gelatine relief itself in proportions corresponding to the different degree of hardening of the different parts of the image and given off during printing, or else the swollen gelatine relief is coloured with fatty ink.

The said ink is absorbed and given off in printing in proportion to the degree of swelling of the different parts of the design.

I claim:—

1. A process for applying silver halide colloid layers without distortion on to future printing forms, comprising applying the silver halide colloid to an unsized paper, making the exposure, applying an alkaline constituent of the developer to be used later in the process to the surface of the printing form, applying the face of the colloid layer to the face of said printing form, developing and hardening said layer on said printing form, and then drawing off said unsized paper.

2. A process for applying silver bromide layers without distortion on to future printing forms, comprising applying the silver bromide colloid to an unsized paper, making the exposure, applying an alkaline constituent of the developer to be used later in the process to the surface of the printing form, applying the face of the colloid layer to the face of said printing form, developing and hardening said layer on said printing form, and then drawing off said unsized paper.

3. A process for applying silver halide colloid layers without distortion on to future printing forms, comprising applying a silver halide colloid to a porous paper support, photographically producing a latent image in said silver halide colloid layer, moistening the surface of said printing form, applying the colloid layer to the moistened printing form, developing and hardening said colloid layer through said porous paper support, and then drawing off the porous paper support from the hardened colloid layer.

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