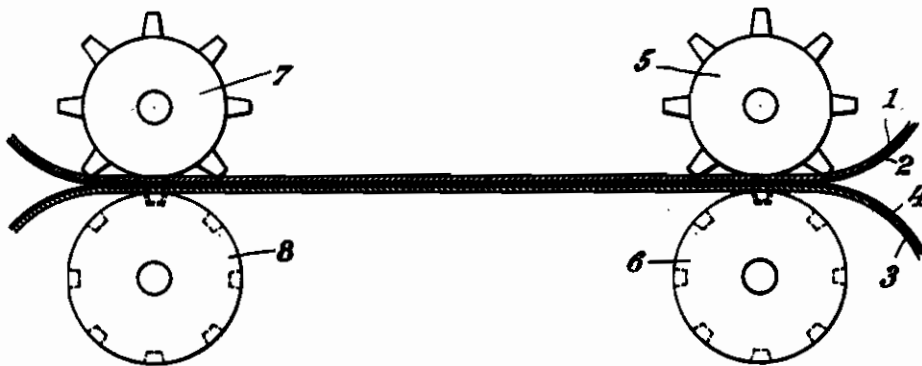


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THE COLOURPHOTOGRAPHY OR
COLOUR-CINEMATOGRAPHY
RESPECTIVELY
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ALIEN PROPERTY CUSTODIAN

METHOD TO MANUFACTURE COLOURED PICTURES, ESPECIALLY THE YELLOW PART-PICTURES IN THE COLOURPHOTOGRAPHY OR COLOUR-CINEMATOGRAPHY RESPECTIVELY

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This invention concerns a method to manufacture by means of a sort of sucking of methods or by one of the toning methods, which consists essentially in substituting the silver of a photographic picture by an otherwise coloured composition, variously coloured pictures, especially suitable also for projections.

The nature of the method consists therein that xanthogeneous compositions, insoluble in water, will be used as substance, which will produce the picture in figural distribution and graduation.

Especially the hardmetalxanthogenates are differently coloured. The shade of colour depends not only upon the metal, but also upon the fact, which homologous xanthogenates thus, for instance, an ethyl-, propyl-, butyl, amyl- or any xanthogenate will be used. Thus, for instance, a ferroxanthogenate will be of brown colour, a cobalt xanthogenate olive-green, a cadmiumxanthogenate white, a silver- and copperxanthogenate yellow, uranium- and nickelxanthogenates orange-yellow. There is, however, a series of colour-shades at disposition. Singular species of the hardmetalxanthogenates may easily be transformed into other xanthogenates or other compositions, so that also numerous toning processes may be brought about.

An especially advantageous employment the method will find, according to the invention, in the manufacture of the yellow part-picture.

For the manufacture of the blue and red part-picture metal alloys (such as, for instance, berline-blue- and nickel-dimethylglyoxine), are at disposition which, with regard to the correct shade of colour as well as the transparency of the sediment, will correspond to all requirements for the manufacture of the transparent picture, such as, for instance, cinematographic films. The blue and red part-picture may be produced by a toning method on the basis of a developed silver-picture or the picture may be manufactured on the basis of wash-out relieves, according to the sucking-off method. This makes it possible by means of a lead-chromate- or cadmium-sulfide sediment. Known is also to manufacture the yellow part-picture of a toning method over the silver through substituting this lead-chromate- or cadmium-sulfide. In this manner, it is true, suitable on-site-pictures may be obtained, these sediments are, however, in the transparency not yellow, but dull, brown-yellow until almost not transparent, so that they are inapplicable for the manufacture of coloured projection-photography.

The invention obviates this inconvenience by the fact that the picture will be formed by means

of copper-xanthogenate, including the substitution-products. The copperxanthogenates will form clear, also in transparency, pure yellow sediments of a light yellow up to goldyellow shades, so that by forming a mixed sediment of, for instance ethylxanthogeneacetic and propylxanthogeneacetic copper, the yellow colour, which will best correspond with the threecolour photography.

The manufacture of the yellow picture may, according to the invention, result as toning on the basis of a silver-picture or by means of the sucking-off method.

In order to transform a silver-picture into a copperxanthogenepicture, one must, for instance, proceed thus, that the silver-picture will at first, in the known manner, be transformed into a copperferrocyanepicture or any other coppercontaining picture.

A suitable transformation consists, for instance, of:

Sulfate of copper-----grammes--	4
Ferricyanide of potassium-----do----	6
Nitrate of potassium-----do-----	15
Carbonate of ammonium-----do-----	1.5
Water-----cubiccentimetres--	1000

In this bath the silver-picture soon receives a copper-brown colour; it will be watered and fixed and comes then into a 5% solution consisting of potassiumxanthogenate, where its transformation into the yellow picture will quickly occur.

Owing to the fact that the alkalimetalxanthogenates will let themselves extraordinarily easily be washed out of gelatine layers, one may also proceed in the following way:

The silver picture will in a solution of ferricyanide of potassium- or of ferricyanide of potassium- plus halogenepotassium-metal be changed into a ferrocyanogenesilver-picture, respectively a halogenesilver-picture and this, by bathing it in an alkalimetalxanthogene solution, be transformed into a paleyellow silverxanthogenepicture. After a relatively short watering, the picture will be put into a solution of coppersalt, to which advantageously a solution of brominepotassium or any such like ingredient will have to be added, and thus transformed into the strongly yellow copperxanthogenatepicture, which will then have to be fixed.

In the sucking-up process, which will employ gelatine adhering a picture-supporter of an, according to the picture, hardened or in relief graduated, sucking-off form, the method may be employed in a different manner.

Thus, for instance, one may print upon a print-layer covered with cadmiumferrocyanide by means of sucking-off forms drenched with potassiumxanthogenate, whereby an, according to the picture, distributed and graduated white cadmiumxanthogenate will form itself. The not transplanted cadmiumferrocyanide will be fixed and the remaining white cadmiumxanthogenate transformed into an otherwise coloured hardmetalxanthogenate.

An advantageous use in the sucking-off print that circumstance may possibly find, that various hardmetalsalts, such as iron-, nickel-, cobalt- and especially coppersalts will sit fast and indelibly in gelatine and against the alkalimetalxanthogenate, which sits in gelatine very easily movable, will show hardly any ability for diffusion.

When, for instance, the gelatine layer of the picture-supporter will be drenched with sulfate of copper, when it will be washed in order to remove the non-adhering part of the solution, when the sucking-off form will, for instance, be drenched with potassiumxanthogenate and its surplus be quenched off, the potassiumxanthogenate will, when the print-form will be quenched on, go over entirely and within a few seconds into the picture-layer and form there the yellow copperxanthogenatepicture, without that in the meantime sulfate of copper will diffuse, so that this will remain entirely uncoloured.

An accomplished process for the manufacture of a threecolour-film, according to the invention, is described as example of execution in the following:

The three part-negative filmstrips are being produced according to one of the known methods. Upon a doubly layered positive film now, according to the known way, on the one side the red-filter- and on the other side the green-filter-photograph will be copied in an exact cover, developed, fixed and watered. Now the film will be bathed in a ferricyanide of potassium solution, so that the whole silver will be transformed into ferrocyanesilver. Then the side with the red-filter-picture will be treated with a ferrisalt solution plus bromium-potassium or such like, whereby the blue pictures will be brought about. The other side with the green-filter-picture will be treated with a mixture of potassiumnickelcyanide plus some water solution of potassium- or sodium-dimethylglyoxine, whereby in a known manner red pictures will be brought about, which in the colour-shade will perfectly answer to the three-colour same as the blue pictures.

The blue-filter negatives will be copied from the backside upon a film-stripe, which possesses an unhardened washing-out emulsion, copied, and thus, by means of a hardened development or hard-bleaching in the known manner, a wash-out relief will be produced. The film-stripe carrying the red and blue part-pictures, will be drenched with a solution of sulfate of copper, then well watered and, by means of wiping rollers or such like contrivances freed of adhering drops. The film-stripe will, by way of example, with the sucking-off form be drawn through a mixture of ethyl- and propylpotassiumxanthogene and quenched between caoutchouc-rollers, so that the surplus of solution will be obviated, whereas the diffused share of the solution remains unchanged

in the gelatine-relief. Then the relief-film will in the by the film-perforation guaranteed en- chasing be quenched upon the side with the red part-pictures, whereas, in the already described manner, within a few seconds, the yellow part-pictures will form themselves upon the red ones. The side of the film, which is destined for the red pictures, may also above the layer of emulsion possess a special layer of gelatine, which receives the yellow print.

Instead of the red part-pictures, the yellow ones may by means of the already described toning-process be manufactured and the red part-pictures be printed on in a by itself known manner through the sucking-off printing method.

One of these part-pictures series, especially the yellow or red one, may also by toning be manufactured upon a second film, which possesses a hardened emulsion-layer, being separated by an easily fusible intermediate layer from the picture supporting stripe. The hardened layer is then quenched upon one side of the already doubly pictured film. The intermediate layer is then being melted in hot water and thus the third series of pictures transported upon the other film. Transparent pictures may also thus be manufactured that the hardmetalxanthogenatedsediment will be formed in one outwash-relief itself, which has before been freed of silver. If the outwash-relief, which has been made glassclear by a treatment with the Farmer weakener, for instance, in a sulfate of copper solution, is bathed, washed out and brought into a solution of potassiumxanthogenate, there will originate a perfectly clear, yellow transparent picture.

By means of a known manner, through a bath in a ferrisalt solution and a subsequent treatment with ferrocyanide of potassium and a further bath in a nickelsalt solution and treatment with dimethylglyoxine, a blue and red transparent picture will be manufactured. By uniting three in this manner produced part-pictures, one will receive a clear transparent paper.

In the enclosed sketch the method is described on the example of the manufacture of the yellow part-picture by means of a sucking-off print upon a cinematographic film.

The film, made of celluloid, bears a layer of gelatine 2, which is drenched with sulfate of copper.

The celluloidfilm 3 bears a layer of gelatine 4, which contains the pictures in a relief-form. Such relief-pictures are, for instance, won by exposing a diapositive film from its backside under a negative, developing the pictures, hardening them in a bromineoil bleacher and then washing out the unhardened lights in warm water or one exposes the film from its layer-side below a positive, develops and hardens it in a bromineoil bleaches, whereby pictures will originate, with a various ability to swell.

The film 4 will be drenched with potassiumxanthogenate and, layer on layer with the film 1 quenched together between the tack-rollers 5 and the roller 6, bearing the answering vaulting. The films run now in contact for a corresponding stretch up to the draw-rollers 7 and 8, and are separated again behind these.

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