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METHOD AND MATERIAL FOR MAKING
COLORED PHOTOGRAPHIC PRITS
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Fig. 1

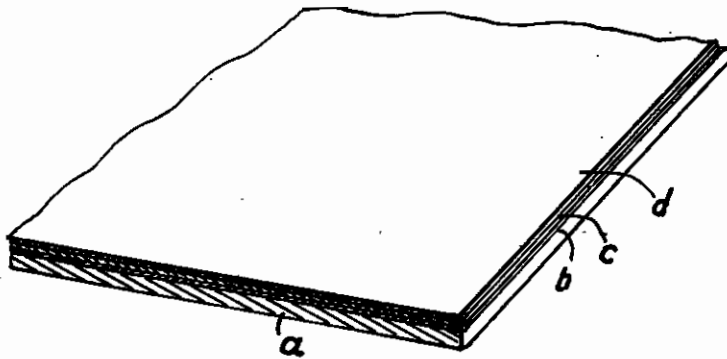
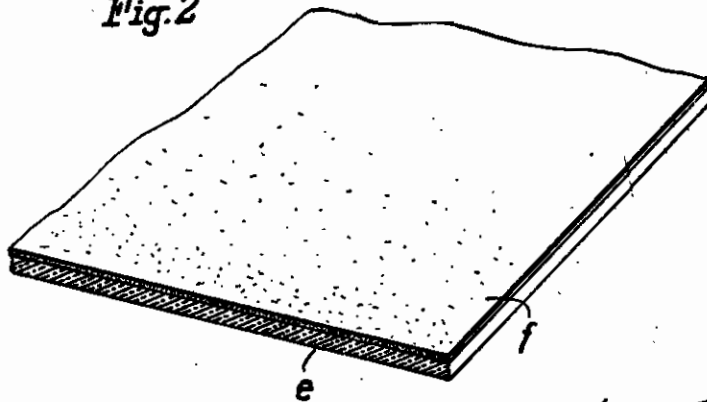


Fig. 2



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ALIEN PROPERTY CUSTODIAN

METHOD AND MATERIAL FOR MAKING COLORED PHOTOGRAPHIC PRINTS

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My invention relates to a method for producing colored positive images either on an opaque material such as paper or the like or on a transparent material such as glass or the like, the steps of the method being:

Firstly exposing to the light in a camera of common type a panchromatic sensitized material through a colored filter screen contacting the light-sensitive layer, and developing the material to a black-white negative, thereafter printing said negative on a positive material composed of an opaque or transparent support, and at least three colored light-sensitive emulsion-layers superposed above one another in such a succession, that the layer of the color capable of reflecting the more energetic light is always situated above a layer, the color of which is capable of reflecting a less energetic light. The light is passed from the negative to the support and then through the colored layers. Finally the prints are developed in warm water, preferably with the addition of a little ammonia.

It is the main object of my invention to simplify the obtaining of colored photographic positives and to enable the use of cheap materials in carrying out my method.

When operating in the afore-described manner a decomposition of the light into its component colors takes place in exact conformity with the colors emitted from the object, the negative becoming graduated in accordance with the values of the colors. After the exposure the colored filter screen is free for other exposures, the negative being now capable of letting pass only such color-rays as correspond to the graduation of its sensitive layer.

The printing material may be sensitized either by potassium dichromate or by silver chloride or bromide. As already said, the developing process takes place by using no other agent than warm water, preferably with the addition of a little ammonia.

When using silver chloride or bromide, special developers known per se are to be employed before the treatment in warm water.

When using silver bromide an enlarging material for making colored prints can be prepared therewith.

When potassium dichromate is employed for sensitizing the printing material one of the following receipts may be followed:

Receipt I.—200 c. cm. distilled water; 8 g. potassium dichromate. Add ammonia until the solution becomes yellow.

Receipt II.—120 c. cm. distilled water; 10 g.

ammonium dichromate. 1 part by volume of this solution is to be mixed with 2 parts by volume of alcohol.

Receipt I is for bathing the papers.

5 Receipt II is to be employed only for sensitizing the layers with a brush or the like. Drying requires a very short time.

When the layers during the exposure were overlighted the developed image may be treated with a solution according to the following receipt 10 III, in order to facilitate the removal of the unlighted parts.

Receipt III.—200 c. cm. distilled water; 8 g. sodium carbonate; 5 drops of pure hydrochloric acid.

15 In order to harden the finished images and likewise to further clear the colors, they are to be treated in a bath of the following.

Receipt IV.—250 c. cm. distilled water; 3 g. chrome alum.

20 After exposure and before developing the image (when not more than 3 layers of colors are present on the support of the positive material) a colorless gelatinized paper is laid upon the color-emulsions, which paper was previously laid for a short time in water. With a roll-squeezer the said paper is pressed on the image. Thereafter 25 the picture covered with the said paper is placed for 5 minutes into warm water of not more than 20° C. and then the paper is withdrawn. The non-lighted parts of the emulsion adhere to the paper. Then the positive is cautiously developed in fresh warm water of not more than 20° C.

When silver chloride or bromide are employed, 30 the squeezing of the papers is unnecessary, because in this case the image is developed on its support itself and only the non-lighted parts of the emulsion are removed.

The new paper and the new filter-screen, forming important parts of my invention are illustrated in the accompanying drawings in which

Fig. 1 represents the new paper and

Fig. 2 the new filter-screen, both in perspective view.

35 In Fig. 1 *a* designates the support, preferably paper, for which however glass or another material may be substituted. With *b*, *c* and *d* the color-layers are designated, *b* representing the yellow, *c* the red and *d* the blue color. The yellow color must be adjacent that side from which 40 the light enters. At least three basic colors are to be employed.

45 However it is clear, that when more than three colors are employed the print will be better and more expressive.

The filter-screen illustrated in Fig. 2 consists of a support *e*, covered with a single layer *f*, in which all colors in conformity with the colors on the support *a*, or at least the three basic colors, thoroughly mixed with one another, are contained in form of emulsions. The support *e* may be of glass or celluloid or an other transparent material. Of course the colored layer must touch the sensitized layer of the negative material.

For producing the filter-screen the following receipt V may be followed:—

Receipt V.—100 c. cm. distilled water; at least 70 grms. saturated solution of gum arabic.

To 100 c. cm. of this solution 20 c. cm. glycerine are to be added.

Now mix with one another: 100 c. cm. distilled water; 20 c. cm. glycerine; 4 g. so-called filter violet. (This is a compound $C_{23}H_{17}NaO_4S_2Na_2$.)

On the other hand a hardening solution is prepared according to the following

Receipt VI.—100 c. cm. distilled water; 5 g. chrome alum.

Of this hardening solution 15 c. cm. are to be added to said color emulsion, thoroughly mixing both at 35° C. Thereafter the whole is slowly

evaporated with continuous stirring and then the resulting product is poured on glass plates. After solidification the foil is ground to a fine powder and the required quantity thereof is mixed with the different color emulsions and spread on the support *e*.

In any event for these emulsions the same colors are to be used as for the layers on the paper.

As the negative material panchromatic plates or films should be used because such plates or films are themselves very sensitive to colors.

Before the development the plates are to be treated for about 2–3 minutes with a pinakryptol green bath ($C_{22}H_{12}N_3Cl$).

In order to compensate for the loss arising from the fact that the light must penetrate the filter before impinging upon the sensitive layer a mirror or a polished metal film may be inserted behind the said layer during the exposure. Thereby the time of exposure is considerably shortened, because the mirror or polished metal film reflects the rays of light, so that a better utilization of the light is obtained.

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