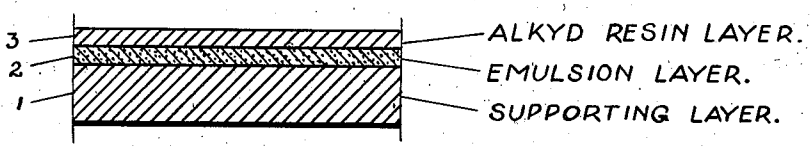
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PHOTOGRAPHIC STRUCTURE

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## PHOTOGRAPHIC STRUCTURE

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1 Claim. (Cl. 95—8)

This invention relates to a photographic structure, with particular reference to a light-sensitive layer mounted on a support, and has for its purpose to provide such a light-sensitive layer with a superficial coating or protective layer attached thereto and of such character as to permit the light-sensitive layer to be exposed in direct contact with a wet negative that has previously been processed photographically but not thoroughly washed and dried, the protective layer being unaffected by water and the remnants of photographic acid or fixing solutions adhering to the negative and also being soluble in an alkaline or photographic developing solution so that it does not interfere with the normal processing of the light-sensitive layer.

According to conventional procedures, a negative after exposure is subjected to fixing and washing solutions, after which it is thoroughly dried before printing. The drying operation, which requires considerable time, is necessary particularly in the case of contact printing where the negative is placed directly against the unexposed light-sensitive layer because otherwise the water or residual photographic acid or fixing solution remaining on the negative will injure the unexposed light-sensitive layer when brought in contact therewith. Recently there has been a demand for rapid processing of photographic prints in military and related work which makes it importantly desirable to eliminate the drying of negatives and to permit contact printing from a negative immediately after the latter is processed so as to save the time heretofore required in the drying operation.

There have been attempts to employ a thin transparent sheet between a wet negative and an unexposed light-sensitive layer but this has proved impractical for large scale operations because of inconvenience where automatic printing machines are used, and owing to the difficulty of maintaining optical contact between the abutting surfaces of the negative and the unexposed light-sensitive layer by reason of water spots and resulting irregularities, and it is a particular purpose of this invention to provide a light-sensitive layer with an attached clear, transparent coating or superficial protective layer that is insoluble in and unaffected by water, acids, and hypo or fixing solutions, and which is readily soluble in an alkaline or photographic developing solution during the processing of the light-sensitive layer which can therefore be processed in the usual way after exposure in contact with a wet negative.

Light-sensitive layers have been provided with coatings that are removable during processing, for anti-halation or anti-abrasion purposes, as for instance cellulose esters of dicarboxylic acids, polyvinyl esters of dicarboxylic acids, dicarboxylic acid esters of agar and gum arabic, gum sandarac, amerol, colophony, or yellow gum acaroid, but these materials are impractical and unsatisfactory for applicant's purposes because of their color, their permeability to moisture, or their solubility in acetic acid, and it is a further purpose of the invention to afford a light-sensitive layer with an attached superficial protective coating or layer that is not subject to any of the above mentioned objections, which does not interfere with the normal processing of the light-sensitive layer, or in any way affect its photographic qualities, and which will effect a substantial saving in time by permitting contact printing on a light-sensitive layer from a wet negative immediately after it is processed and while it still carries remnants of water or photographic processing solutions with which it has been treated. In fact, the operation of washing the negative can be completely eliminated if preferred, without affecting the result on the light-sensitive layer.

It has been found that an overcoating or protective layer of an organic solvent solution or water dispersion of an alkali soluble alkyd resin is readily soluble in developing solutions and weak alkaline solutions so that it does not interfere in any way with the normal processing of a light-sensitive layer protected with such a coating. Such a protective layer is insoluble in water or photographic acid fixing or hypo solutions and unaffected thereby so that the light-sensitive layer is waterproofed and thoroughly protected from any water, acid, and fixing solution adhering to the wet negative when in contact therewith during exposure, and it is thus possible to obtain prints from negatives much more quickly than heretofore by eliminating the washing and drying time.

Resistance of the alkali soluble alkyd resin layer to water or acid fixing solutions may be increased by adding to the material from which the resin layer is formed suitable water-repelling compounds such as dibutyl phthalate, di-(o-xenyl) monophenyl phosphate, or ethyl cellulose, and the flexibility of a supporting layer such as film or paper is substantially increased by the addition of these materials.

The invention is illustrated in the accompanying drawing in which 1 designates a supporting layer such as paper, film, or glass, 2 is a light-sensitive layer such as a silver halide gelatin

emulsion attached to the support in the usual manner, and 3 is a protective layer or coating of alkali soluble alkyd resin. The coating 3 is a thin, clear, transparent layer which may be attached to the light-sensitive layer 2 according to any suitable coating process as well known in the art.

Layers such as contemplated under the invention are also adapted to be used as non-halation layers by adding suitable dyes for the purpose.

Such an alkali soluble alkyd resin layer for anti-halation purposes can be made by incorporating in the resin a suitable dye such as nigrosine alcohol soluble color index 864, acid green color index 666, or safranine color index 841.

The invention may be carried out in many practical ways, as for instance according to the following examples:

*Example I*

150 grams of an alkali soluble glycerol phthalate resin are dissolved in 1 liter of solvent such as acetone or a mixture of equal parts of toluene and methanol. An instance of the alkali soluble glycerol phthalate resin that is used is found in the commercial product sold under the name of "Glyptal" by the General Electric Company. The solution thus obtained is coated over the usual light-sensitive layer in any well known manner, the coated layer drying in intimate contact with the light-sensitive layer and affording a waterproof protective coating or layer that is clear, transparent, and unaffected by the photographic acid fixing solutions.

After exposure, the light-sensitive layer can be processed in the usual fashion and the resin layer quickly and easily dissolves in the photographic developing solution or a weak alkaline solution.

If desired, a plasticizer such as dibutyl phthalate, di(o-xenyl) monophenyl phosphate, or a mixture of ortho and para-toluene ethyl sulphonamides, commercially known as "Santicizer No. 8," in an amount of from 10% to 60% of the total volume of resin may be added to the solution before coating on the light-sensitive layer.

*Example II*

A coating material may be formed by mixing 100 grams of "Glyptal 1350," a resin marketed by the General Electric Company, 10 grams of ethyl cellulose, and 1000 ml. of acetone. To this solution can be added 1% of di-(o-xenyl) monophenyl phosphate or 1% dibutyl phthalate by weight, although this is not necessary. The solution when coated over a light-sensitive layer and permitted to dry affords a clear, transparent protective layer or coating that is not affected by water or photographic acid fixing solutions and which is quickly soluble in a photographic developing or alkaline solution.

*Example III*

A coating solution formed by mixing 150 grams of "Glyptal 1350" and 30 ml. of "Santicizer No. 8," both materials more fully described above, and 1000 ml. acetone is coated on the usual light-sensitive layer and permitted to dry. This will give the same results as described above both as to waterproofing the layer, rendering it unsusceptible to acid and hypo solutions, and being easily soluble in a photographic developing or alkaline solution.

While the invention has been described with reference to certain particular materials to be used as coatings, it is not confined to the precise combinations herein disclosed, and this application is intended to cover such modifications, departures or other adaptations as may come within the purposes of the invention and the scope of the following claim.

I claim:

A photographic structure that permits exposure of a light-sensitive layer in contact with a negative wet from an acid-fixing solution, including a supporting layer, a light-sensitive silver halide layer, and a clear, transparent, waterproof, protective layer attached to the light-sensitive layer and soluble in an alkaline photographic developing solution, said protective layer consisting of a resin material produced from a glycerol phthalate resin solution selected from the group consisting of organic solvent solutions and water dispersions having a concentration of at least ten per cent and being impermeable to water and acid-fixing solutions and acting to permit exposure of the light-sensitive layer in contact with a wet negative and to prevent access of water and acid to the light-sensitive layer, and said resin layer being readily and completely soluble in alkaline photographic developing solutions.

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