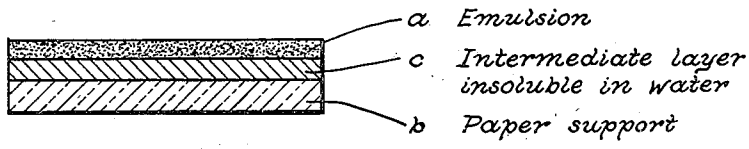
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My present invention relates to papers for photo-mechanical processes.

One of its objects is a transfer paper having between the emulsion layer and the paper support an intermediate layer insoluble in water. Another object is a process of producing such a transfer paper. Another object is a process of transferring the picture produced on a transfer paper having a water-insoluble intermediate layer onto a rigid support. Further objects will be seen from the detailed specification following hereafter.

For photo-mechanical processes, for instance for printing or reproduction, it is necessary that the layer carrying the picture should not vary in its dimensions during the working process, but should remain in true register. This is indeed the case when rigid expansible materials are used as supports, for instance glass, metal or Celluloid, but layers of paper which on account of its cheapness would be a desirable material do not remain in true register since they expand in the operation of development or the like and shrink in drying to smaller dimensions than the original in an uncontrollable manner. It has therefore been proposed to transfer such layers from their paper supports to a rigid support, for example by pressing the wetted emulsion layer onto a metal carrier and then before or during the development removing the paper in order to make the photographic layer freely accessible to the developer. The emulsion layer which contains the picture when thus transferred is firmly carried from the beginning of the development on the rigid support and retains exactly its original dimensions. To facilitate the separation of the paper there may be an intermediate layer of, for instance gum arabic or dextrine, which is soluble in cold water between the paper support and the emulsion.

Since, however, such an intermediate layer is soluble in cold water it happens that in the transfer from the paper to the rigid support damage may occur owing to the paper during the transfer process becoming locally wetted on its back surface. Such local wetting as soon as the paper material itself has become moist and before the emulsion layer is firmly adhering to the metal support causes a partial liberation of the exposed layer from the paper support and a consequent swelling of the layer at this point and a distortion of the picture, cracks in the layer and the like.

The present invention avoids this trouble by using as the intermediate layer not a material which dissolves in cold water, but one that is soluble in a separate bath, for example a weak alkali, an acid or a neutral salt, or in a developer. The effect of the transfer is not thereby affected since the paper layer can easily and certainly be removed. Thus the effects of the above indicated kind are avoided.

Substances capable of forming films suitable for the purpose of this invention are the artificial or natural materials of high molecular weight or highly polymeric constitution which are insoluble in water, but soluble in weak alkalies, acids or certain salt baths. The solubility may be due to the presence of carboxyl groups, of phenolic hydroxyl, of sulfonic acid groups or amino-groups. Such bodies include shellac, colophony, casein, sulfonated rubber, polymerization products from vinyl compounds which contain carboxyl groups, condensation resins from aliphatic or aromatic or heterocyclic aldehydes and condensation resins from phenolic bodies which contain free phenolic hydroxyl groups or free carboxyl groups and which for the rest may be substituted in any other manner; and finally natural or artificial resins and polymerization or condensation products which by a subsequent treatment as for instance by a complete or partial saponification or by peptization acquire solubility in dilute alkalies. As an example of a body soluble in acids diphenyl guanidine may be cited and as an example of a body soluble in a neutral salt solution sulfanilic acid. Suitable layers for the purpose are also described in the examples of the French Patent 807,760.

The body to be used is dissolved in a suitable solvent, for example alcohol, to form a solution of 3–8 per cent strength and the solution is poured on to the paper support. It is of disadvantage to assist the dissolution of the resin in its solvent by the addition of a known wetting agent, for instance saponin, alborite, emulphor O (see for instance German Patent 624,740). When this layer of resin is dry the emulsion layer is poured on to the resin layer. It is also suitable to mix the resin with gelatin, dextrine, or another lyophil colloid. Furthermore, casein is suitable, for this yields either alone or in admixture with gum arabic or the like layers that are soluble in dilute alkali.

The following examples illustrate the invention:

On a paper support, preferably a baryted paper of the kind used in the manufacture of gas light paper, a layer of the thickness of 2–10μ

is produced by pouring of any one of the following solutions:

1. 250 grams of colophony which has been dissolved in sodium carbonate solution and reprecipitated by means of acid, dissolved in
5000 cc. of butanol.

2. 250 grams of artificial resin made from phenoxyacetic acid and fromaldehyde dissolved in
5000 cc. of alcohol.

3. 50 grams of the polymerization product consisting of 10 per cent of polyacrylic acid nitrile and 90 per cent of polyacrylic acid,
500 cc. of propanol,
2500 cc. of isobutanol,
2 grams of saponin.

4. 10 grams of shellac
100 cc. of water
1 gram of emulphor O (reaction product from 1 mol oleyl alcohol and 20 mol ethylene oxide)
1 cc. of ammonia of 25 per cent strength.

5. 135 grams of diphenyl guanidine
150 cc. of water,
50 cc. of concentrated ammonia
1.8 litres of methanol
2 cc. of formaldehyde, commercial, 40 per cent strength.

When the layer is dried a suitable emulsion is cast on it. When the finished paper has been exposed it is squeegeed on to a rigid support, for instance metal or glass, and wetted with water, care being taken that bubbles are expelled. Then either by a preliminary alkaline bath or in the developing process itself the paper layer is withdrawn and the picture finally developed and if desired further treated.

What I claim is:

1. A photo-mechanical transfer paper which comprises a paper support, an intermediate layer on said support comprising an artificial resin produced by condensing phenoxyacetic acid with formaldehyde, and a light-sensitive layer on said intermediate layer.

2. A photo-mechanical transfer paper which comprises a paper support, an intermediate layer on said support comprising a polymerization product from vinyl compounds containing a carboxyl group, and a light-sensitive layer on said intermediate layer.

3. A photo-mechanical transfer paper which comprises a paper support, an intermediate layer on said support comprising a member selected from the class consisting of an organic substance of high molecular weight insoluble in water but soluble in an aqueous alkaline solution, an organic substance of high molecular weight insoluble in water but soluble in an aqueous acid solution, and an organic substance of high molecular weight insoluble in water but soluble in an aqueous solution of a neutral salt, and a light-sensitive layer on said intermediate layer.

4. A photo-mechanical transfer paper which comprises a paper support, an intermediate layer on said support comprising a member selected from the class consisting of a resin insoluble in water but soluble in an aqueous alkaline solution, a resin insoluble in water but soluble in an aqueous acid solution, and a resin insoluble in water but soluble in an aqueous solution of a neutral salt, and a light-sensitive layer on said intermediate layer.

GERHARD VON KUJAWA.