

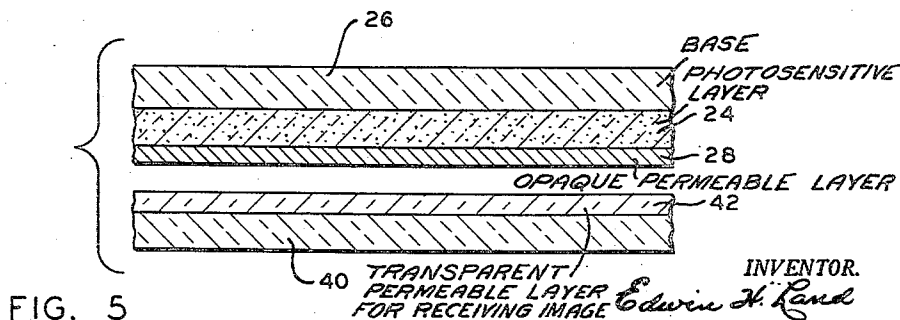
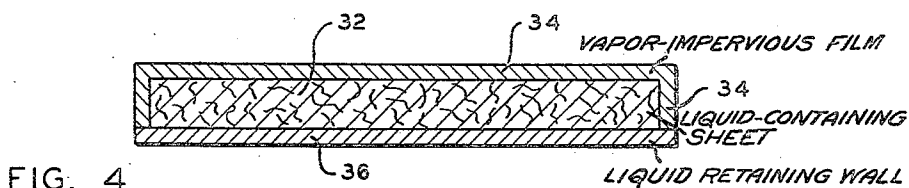
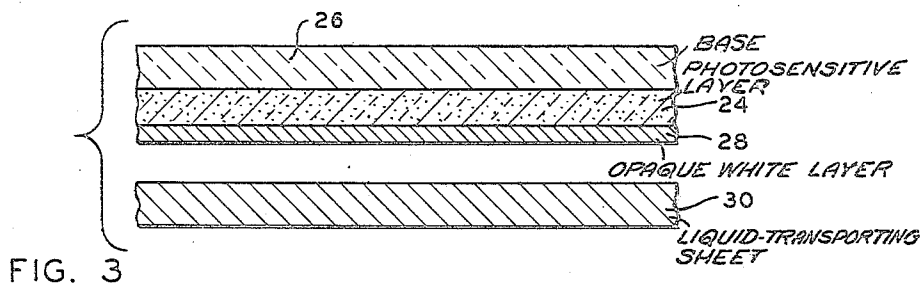
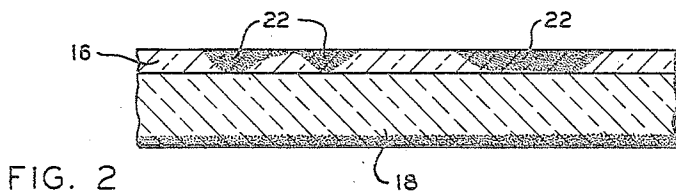
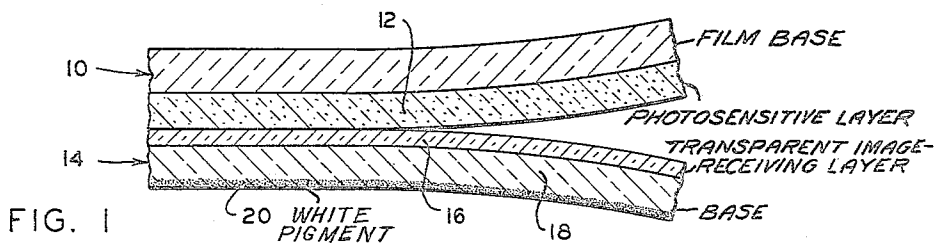
March 14, 1950

E. H. LAND

2,500,421

PHOTOGRAPHIC SILVER HALIDE TRANSFER PROCESS

Filed Nov. 3, 1944



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UNITED STATES PATENT OFFICE

2,500,421

PHOTOGRAPHIC SILVER HALIDE TRANSFER
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Application November 3, 1944, Serial No. 561,696

6 Claims. (Cl. 95—6)

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This invention relates to photography, and more particularly to methods for forming fixed, stable, positive photographic prints.

This application is a continuation-in-part of my copending application Serial No. 539,550, filed June 9, 1944, now abandoned, for Photographic product, process and apparatus.

One of the objects of the present invention is to provide a novel process whereby a photographic film, differentially exposed to have formed therein a latent image, is developed and a fixed, stable print of said image is obtained.

A still further object is to provide a novel method whereby a novel positive image of the subject matter of a latent image is obtained as a direct product of the development of the latent image.

Further objects are the provision of novel photographic processes of the above character whereby the permeation with a liquid reagent of a photosensitive layer having a latent image formed therein develops the latent image and gives an image-forming component; whereby the image-forming component is translated relative to the material of the developed latent image to form in another layer of material a fixed image which is a positive of the subject matter to which the film was exposed in producing the latent image; whereby the image-forming component comprises a soluble complex of silver and the desired image is formed by reducing said component to an insoluble product comprising silver in a receiving layer for said component, i. e., in a positive print layer; whereby the photosensitive layer acts to dry the receiving layer after the formation of the positive image therein; whereby the photosensitive layer tends to remove from the receiving layer the developer and the complex-forming compound in excess of that which is used to form the positive image in the receiving layer; wherein the positive print layer is a white, nontransparent, water-permeable layer; wherein the positive print layer is a layer of water-permeable, transparent material such as gelatin or regenerated cellulose, preferably mounted on a white, nontransparent and preferably opaque base; and wherein one or more of the substances for the development of the latent image and/or the formation of the fixed positive image is contained in solid form in one of the sheet materials used in the formation of the positive print.

The invention accordingly comprises the several steps and relation and order of one or more of such steps with respect to each of the others, which are exemplified in the following detailed disclosure, and the scope of the application of which will be indicated in the claims.

For a fuller understanding of the nature and

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objects of the invention, reference should be had to the following detailed description taken in connection with the accompanying drawings wherein:

Figure 1 is an enlarged, diagrammatic, fragmentary, sectional view of sheet materials for carrying out one method for forming a fixed positive image in accordance with the present invention;

Fig. 2 is a view similar to Fig. 1 of the fixed positive print obtained by the method and materials illustrated in Fig. 1;

Fig. 3 is a view similar to Fig. 1 of film means comprising a photosensitive layer and a receiving layer whereby a modification of the process of the invention may be carried out;

Fig. 4 is an enlarged, diagrammatic, transverse sectional view, with the thicknesses of the materials greatly exaggerated, of a liquid-containing sheet which may be used to provide the liquid reagent for carrying out the novel process of the invention; and

Fig. 5 is a view similar to Fig. 3 of a modification of the film means of Fig. 3.

To obtain a positive image in accordance with one method comprehended by the present invention, a photosensitive layer comprising a photosensitive material of the type which is rendered developable by exposure to light, e. g., a silver halide, a mixture of silver halides, or a silver mixed halide, is differentially exposed, for example, in a camera, to predetermined subject matter so as to form therein a latent image of said subject matter. The exposed layer is then permeated with a liquid reagent which comprises a developer for reducing the exposed silver salts to silver and a compound for reacting with the undeveloped silver salts to form a silver complex soluble in the reagent. The complex-forming reaction takes place at a more rapid rate than the rate at which the developer will reduce the unexposed silver salt whereby a predetermined portion of the unexposed silver salt is transformed to the soluble complex. The positive image of the subject matter to which the photosensitive layer is exposed is obtained from the soluble silver complex by transporting said complex to an adjacent receiving layer of water-permeable material, and reducing said complex in the latter layer to provide an image-forming component comprising silver.

After the formation therein of the image, the receiving layer may be separated from the photosensitive layer and the image viewed from the side which was adjacent the photosensitive layer. It is also possible to permanently secure the receiving layer to the photosensitive layer and to form said receiving layer of a relatively water-permeable, nontransparent and preferably

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opaque, white material sufficiently thin so that the complex silver ions may permeate through said layer to the surface thereof remote from the photosensitive layer to form an image comprising silver visible from the latter surface of said layer.

To remove the liquid reagent from the receiving layer after the formation therein of the positive image, and thereby to dry said receiving layer, it is preferable to select a photosensitive layer which is substantially thicker than the receiving layer, and to select as the carrier for the photosensitive layer a material which is more liquid-absorbent than the material of the receiving layer. For example, the carrier material for the photosensitive layer may be a relatively unhardened gelatin, while the receiving layer may be formed of a substantially more hardened gelatin.

It is also preferable to have the photosensitive layer remove from the receiving layer any developer which remains in said layer after the positive image is formed therein. To effect this result, the quantity of reagent used for the development of the predetermined area of the photosensitive layer is controlled to provide less developer than is required to develop all of the silver halide in said area. In addition, the reagent is preferably introduced into the photosensitive layer after the exposure of the latter from the side of said layer which is adjacent to the receiving layer. This may be accomplished, for example, by spreading the reagent between the surfaces of the photosensitive and receiving layers as the latter are brought into face-to-face contact, or by using the receiving layer as the means for transporting the reagent to the photosensitive layer. This concentrates the reagent at the interface of the photosensitive and receiving layers as the image-forming reaction begins. As a result, the developer acts first to develop the exposed silver halide in the portion of the photosensitive layer adjoining the interface and then to develop the silver halide complex which is transported to the receiving layer. After enough time has elapsed to transport the silver complex to the receiving layer and to form from said complex the positive silver image, the photosensitive layer is preferably uniformly exposed to light such as daylight or ordinary room lighting to render the excess silver halide therein developable. As a result, all the remaining developer tends to migrate to the latter layer and to be exhausted therein in the development of the exposed silver halide.

The photosensitive layer may also be employed as the medium for removing any excess of the substance for forming the soluble silver complex with the silver halide. This is accomplished by employing substantially less of said substance than can form a soluble complex with the unexposed silver halide in the photosensitive layer and by selecting as said substance a compound such as sodium thiosulfate, which, when in the presence of an excess of silver halide, forms an insoluble complex with said halide. The reagent is caused to permeate the photosensitive layer from the side of the latter layer adjoining the receiving layer, and as a result there is an excess of sodium thiosulfate at the surface portions of the photosensitive layer. Thus, at the beginning of the reaction, because of the excess of sodium thiosulfate, there is formed a soluble silver complex which is transported to the receiving layer, where it is reduced to silver. However, as the remaining sodium thiosulfate permeates the

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photosensitive layer, it encounters an excess of silver halide and forms an insoluble complex with the latter. This tends to concentrate any of the complex-forming substance, in excess of that necessary to form a positive image, in the photosensitive layer.

The photosensitive layer is preferably a silver halide "emulsion" comprising a silver halide, or a mixture of silver halides, or a silver mixed halide in a suitable colloidal carrier, preferably gelatin. Other film-forming colloids may be used as carriers, for example other proteins or their derivatives such as glue and albumen, or water-permeable organic plastics such as collodion, cellophane, polyhydroxyalkane, polyvinyl alcohol, and certain of the ethers of cellulose. The emulsion may contain any of the various modifying agents ordinarily incorporated in commercial emulsions such, for example, as dyes, antihalation layers, overcoatings and sensitizers, and, in fact, suitable materials for providing the photosensitive layers for practicing the invention are the commercially available photographic films and papers. It is to be understood that the film base may be any material which provides a satisfactory support for the photosensitive layer, although where the photosensitive layer and the receiving layer are elements of a unitary film structure, it is preferable to mount the photosensitive layer on a base which is transparent so that the latter layer can be exposed through said base.

The image-receiving layer is preferably formed of a water-permeable material, for example, regenerated cellulose, polyvinyl alcohol, polyhydroxyalkane, sodium alginate, cellulose ethers such as methyl cellulose, or their derivatives such as sodium carboxymethyl cellulose or hydroxyethyl cellulose, papers, proteins such as glue or gelatin, carbohydrates such as gums and starch, and mixtures of these materials where the latter are compatible. To form a nontransparent and preferably substantially opaque receiving layer from the relatively transparent materials, it is possible to incorporate in the latter a suitable pigment, such, for example, as titanium dioxide, against which an image comprising silver is visible. Where the receiving layer is to be separated from the photosensitive layer after the formation of the image therein, it is possible to employ relatively thin, transparent layers of the above materials as the receiving layers and to mount said layers on a nontransparent base, for example, of paper, or a plastic impregnated with a suitable pigment. Where the image is to be formed so as to be visible from the side of the receiving layer remote from the photosensitive layer, a relatively thin, white, nontransparent, permeable film, preferably coated on the remote side with a transparent, permeable film, may be employed as the receiving layer.

If gelatin serves as the receiving layer, it is preferable to at least partially harden the same as by a suitable hardening agent as, for example, potassium alum, potassium chrome alum or formaldehyde.

As pointed out above, the novel reagent for permeating the photosensitive layer in accordance with the methods of the invention comprises a substance for developing the exposed silver halide and a substance which reacts with the silver halide to form a silver complex soluble in the reagent, the complex-forming reaction taking place at a less rapid rate than the development of the exposed silver halide. Substantially all of the known photographic developers may be

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employed as such in the reagent, provided they do not react with the complex-forming substance.

Examples of preferred developers are hydroquinone, monomethyl-p-aminophenol sulfate, a mixture of hydroquinone and monomethyl-p-aminophenol sulfate, p-aminophenol hydrochloride, p-hydroxy-phenylaminoacetic acid, p-phenylenediamine, pyrocatechin, and diaminophenol hydrochloride. Other suitable developers are pyrogallol, chlorohydroquinone, o-phenylene diamine, 2-oxyethyl-p-aminophenol, and bromohydroquinone. The reagent preferably comprises an aqueous solution of the developer.

Examples of materials which may be used in the reagent for the purpose of forming a soluble silver complex with the undeveloped silver halide of the photosensitive layer are sodium thiosulfate, ammonium thiosulfate, and ammonia. For obvious reasons, it is preferable that the complex-forming substance be one which does not desensitize the silver halide emulsion and one which is not toxic. For example, a compound such as sodium cyanide which will satisfactory photographic results when used in the reagent in accordance with the methods of the invention is generally not desirable because of its toxic character.

The liquid reagent may also contain an accelerator, preferably an alkali such as sodium hydroxide, potassium hydroxide, sodium carbonate, borax, sodium metaborate, paraformaldehyde, or trisodium phosphate, a restrainer such as potassium bromide, potassium iodide, or sodium chloride, and a preservative such as sodium sulfite.

In the event that the developer and/or the substance for forming the soluble silver complex is a solid at ambient temperatures, it is possible to incorporate either or both of said substances in solid form in the photosensitive layer and/or the receiving layer. With this arrangement, in order to provide the liquid reagent, the layer or layers containing said solid substances are permeated with a solvent, for example, water, for said substances. This may be accomplished by immersing the layer or layers in a water bath or by bringing into engagement with one of said layers, while the two are juxtaposed, a liquid-containing sheet, such as a blotter, saturated with water.

Referring to Fig. 1, there are shown diagrammatically materials for carrying out one modification of the method of the present invention, and, as shown, said materials comprise a sheet of photographic film or paper 10 which preferably has as its photosensitive layer 12 a silver halide-gelatin "emulsion," and a positive print member 14 which embodies an image-receiving layer 16 preferably mounted on a suitable base 18.

In one preferred embodiment of member 14, image-receiving layer 16 is formed of gelatin which is hardened as by immersion in a 10% aqueous solution of formaldehyde for approximately five to fifteen minutes, and base 18 is a cellulosic plastic sheet. To provide a relatively white, opaque background for the silver image, at least the surface layer of the cellulosic base on the side remote from layer 16 is impregnated or coated with a suitable white pigment 20 such, for example, as titanium dioxide. Layer 16 is preferably substantially thinner than layer 12.

To practice the invention, film 10 is exposed to predetermined subject matter to have a latent image of said subject matter formed in layer 12. Thereafter, layer 16 of positive print member 14 is immersed in a solution consisting of:

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Sodium sulfite (anhydrous)-----g--	9.0
Hydroquinone -----g--	4.5
Sodium hydroxide-----g--	3.75
Potassium bromide-----g--	3.0
Sodium thiosulfate -----g--	10.0
Water to make-----cc--	170

for approximately fifteen seconds. Immediately after the immersion, layer 16 is pressed into face-to-face contact with photosensitive layer 12 in a dark room as, for example, by passing the two sheet materials, i. e., film 10 and positive print member 14, between a pair of squeegee rollers. The films are held in contact for approximately one minute in the dark and thereafter film 10, while still in contact with member 14, is exposed uniformly to light for a brief time as, for example, for fifteen seconds in a room illuminated by ordinary incandescent lighting. After the exposure, member 14 is stripped from film 10 and contains a fixed stable positive of the subject matter of the latent image. The image-forming component 22 (Fig. 2) comprises silver and is the insoluble product of the reaction of the soluble silver complex and the developer, and differs from the silver of conventional photographic images wherein the silver image is obtained by a direct reaction between the exposed silver halide and the developer. It is noted that the image-receiving layer is brought into face-to-face contact with the photosensitive layer, and as a result the complex which is transported by the reagent from the photosensitive layer to the receiving layer travels such a short distance that no substantial lateral diffusion thereof takes place, a clear and accurate positive being obtained. Although it is preferable to bring the receiving layer into face-to-face contact with the photosensitive layer, the process of the invention can be carried out with a layer of relatively permeable material, for example, an antihalation layer, interposed between the photosensitive layer and the receiving layer, provided that said intermediate layer is sufficiently thin so that no substantial lateral diffusion of the soluble complex in its travel from the photosensitive layer to the receiving layer will take place.

In another embodiment of member 14, base 18 is a cellulose derivative, for example a cellulose ester or mixed ester such as cellulose acetate, cellulose acetate butyrate or cellulose acetate propionate, and layer 16 is formed by regenerating one surface of said derivative to cellulose. A positive print member of this type may be formed by converting to cellulose the surface layer of the nonpigmented side of cellulose acetate, or by converting to cellulose one of the surface layers of a sheet of a mixed cellulose ester impregnated with a white pigment. The conversion may be effected by immersing the side of the sheet in which the cellulose is to be formed in a solution consisting of:

Sodium hydroxide -----g--	50
Methanol -----cc--	10
Water -----cc--	100

After immersion, the sheet is preferably dipped in a 4% solution of sulfuric acid and washed in water.

It is also possible to use a sheet of regenerated cellulose, i. e., cellophane, as receiving layer 16, and said sheet may be laminated to a suitable white, nontransparent base such as a sheet of a mixed cellulose ester impregnated with a white pigment whereby to provide positive print member 14.

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Examples of other suitable positive print members are gelatin coated papers such as imbibition papers, for instance those used in color photography; gelatin coated plastic or paper films as, for example, bromide papers or process films as for instance moderately slow films employed for copying purposes, with the silver halide dissolved out and with the gelatin preferably at least partially hardened; relatively pure alpha papers without any coating layer; and the latter papers coated with gelatin either in hardened or unhardened condition, the gelatin being cast or rolled thereon.

Examples of other novel reagents for forming positive images in accordance with the invention are given below, but it is to be expressly understood that these examples are illustrative only and that the materials as well as the proportions may be varied to a substantial degree, as will now be apparent to those skilled in the art, without departing from the scope of the invention.

Example 1

Sodium sulfite (anhydrous) -----g--	9.0
Hydroquinone -----g--	4.5
Sodium hydroxide -----g--	3.75
Potassium bromide -----g--	3.0
Sodium thiosulfate -----g--	5.0
Water to make -----cc--	170

Example 2

Stock solution consisting of:

Water -----cc--	500
Monomethyl - p - aminophenol sulfate -----g--	3.1
Sodium sulfate (desiccated) -----g--	45.0
Hydroquinone -----g--	12.0
Sodium carbonate (desiccated) -----g--	67.5
Potassium bromide -----g--	1.9
Water to make -----l--	1.0
50% sodium thiosulfate solution -----cc--	30
Water -----cc--	100

Example 3

The developing solution of Lumiere and Seyewetz, reported in the British Journal of Photography, January 23, 1925, pages 44 and 45, comprising the following ingredients:

Sodium sulfite (anhydrous) -----g--	40
Diamidophenol hydrochloride -----g--	5
Tribasic sodium phosphate -----g--	20
Hypo (crystals) -----g--	25
Water -----cc--	1000

In a modification of the film means of Figs. 1 and 2, film 10 and positive print member 14 may be parts of a composite film. Layer 16 of member 14 is preferably permeated with the liquid reagent prior to the assembling of the composite film and is separated from the photosensitive layer 12 by a water-vapor impervious liquid-retaining sheet. The liquid reagent is retained in layer 16 by a suitable water-vapor impervious casing which includes said liquid-retaining sheet. The latter is constructed so as to be readily removed from between layers 12 and 16 so that after exposure of layer 12 said retaining sheet may be removed and layer 16 caused to engage layer 12, permeating the latter layer with the liquid reagent and causing the positive image comprising silver to be formed in the former layer. After the formation of the image, the positive print member is separated from film 10.

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In a further modification of the invention, the image-receiving layer consists of a sheet of gelatin, cellophane or other relatively water-permeable, transparent, film-forming material without a backing. The sheet is immersed in the liquid reagent and is then superimposed on the photosensitive layer after the exposure of the latter. After the positive image is formed in said image-receiving sheet, the latter is separated from the photosensitive layer and is transferred to a suitable backing sheet, for example of paper or pigmented plastic.

If a positive transparency is desired, the method of Fig. 1 may be carried out with a transparent image-receiving layer mounted on a transparent base.

Another form of film means whereby the novel method of the present invention may be carried out is shown in Fig. 3 and comprises a photosensitive layer 24, supported by a transparent film base 26. Any conventional negative film is satisfactory for this purpose. There is provided on the surface of photosensitive layer 24 a relatively water-permeable, white and substantially non-transparent layer 28 which is relatively thin, having a thickness, for example, of the order of .0001 to .0005 inch.

Layer 28 preferably comprises a water-permeable, film-forming material as, for example, polyhydroxy alkane, sodium alginate, gelatin, cellulose, methyl cellulose, sodium carboxymethyl cellulose, or polyvinyl alcohol, containing a substantial amount of a relatively white pigment such as titanium dioxide. The film-forming material is preferably present only in a sufficient amount to bind the pigment into a film whereby a maximum pigment content for a predetermined film thickness may be obtained. A permeable, relatively opaque layer formed by casting a sheet from a mixture of thirty parts by weight of sodium alginate and twenty parts by weight of titanium dioxide from a water solution comprising approximately one-hundred seventy-five parts by weight of water and thereafter adhered to the photosensitive layer, for example with water, gives good results.

Examples of other film-forming mixtures which may be used are: gelatin and titanium dioxide, polyhydroxy alkane and titanium dioxide, hydroxyethyl cellulose and titanium dioxide, methyl cellulose and titanium dioxide, and sodium carboxymethyl cellulose and titanium dioxide. These mixtures may be cast from solution directly onto the photosensitive layer, or films of the mixtures may be first formed and then adhered to the photosensitive layer.

Various other methods for providing these relatively thin, white, nontransparent, permeable films on the photosensitive layer will now be apparent to those skilled in the art, and it is to be expressly understood that films formed by any such methods are within the scope of the present invention. In some instances it may be desirable to provide as an outer surface for non-transparent layer 28 a permeable, transparent film, or to have the outer surface portions of said layer nonpigmented and transparent.

To carry out the novel method of the invention with this film, photosensitive layer 24 is first exposed through transparent base 26 and thereafter layers 24 and 28 are permeated by the liquid reagent as by bringing into face-to-face contact with layer 28 a sheet 30 which has been immersed in the liquid reagent. The liquid reagent on the surface of sheet 30 is transferred

from said sheet to layer 28 and permeates the latter layer and layer 24. The developer in the reagent reduces the exposed silver halide, and the unexposed silver halide reacts with the complex-forming substance to provide the soluble silver complex. The latter permeates through layer 28 to the outer surface thereof, and when reduced in said layer forms a positive image comprising silver visible from said outer surface.

Layer 28, in addition to providing a white background for the positive silver images, acts as an opaque screen to render invisible the photosensitive layer and the developed silver image in the latter layer. When the positive image has formed in layer 28, sheet 30 is separated from the film.

Good results are obtained by using a sheet of relatively nonpermeable plastic such as cellulose acetate as the liquid-transferring sheet 30, provided that said sheet is brought into contact with layer 28 immediately after the immersion in the liquid reagent. The cellulose acetate, although relatively nonabsorbent, retains enough reagent on the surface thereof to effect the desired reaction.

It is also possible to provide the reagent for

exposed, a separate roll or pack thereof is mounted within the camera.

An example of a liquid-containing sheet material of this character is illustrated diagrammatically in Fig. 4 as comprising a liquid-containing sheet member 32 such as a blotter encased within a vapor-impervious film, such as a film 34 of metal-coated, wax-impregnated paper. A liquid-retaining wall 36 is provided adjacent one surface of liquid-containing member 32. Wall 36 may be a relatively brittle plastic, for example styrene, which can be readily fractured by the application of mechanical stress, or it may be a readily removable film of water-vapor impervious material such as a metal-coated, wax-impregnated paper.

In a modification of the novel method of the invention, the film means in Fig. 3 is used in conjunction with a sheet material (Fig. 5) comprising a transparent base 40, for example, of cellulose acetate or any other relatively transparent carrier sheet, coated with a layer 42 formed of a transparent water-permeable material of the type which may be used as a receiving layer. A preferred material for this purpose is partially hardened gelatin. A latent image is

into a photosensitive layer comprising a silver halide emulsion containing a latent image whereby to develop said latent image to silver and to form with unexposed silver halide a silver complex and wherein said complex in solution in said reagent is transferred by imbibition from said photosensitive layer to a permeable image-receiving layer, held in superposed relation and in relative close proximity to said photosensitive layer, and the silver of said complex is developed by said developer in said image-receiving layer to form therein a reversed image of said latent image, and wherein said silver halide is in excess of that which is transformed to said complex by said silver halide solvent and wherein said developer is in excess of that required to develop the silver images in both said photosensitive layer and said receiving layer, the improvement which comprises maintaining said photosensitive layer and said image-receiving layer in said superposed relation in the absence of light to which said silver halide is sensitive during the transfer of said complex to said image-receiving layer and the formation therein of said reversed image of said latent image; exposing the photosensitive layer to actinic light without disturbing said superposed relation of said image-receiving layer to fog unexposed silver halide therein and whereby said excess developer is oxidized; and subsequently separating said image-receiving and photosensitive layers from said superposed relation.

2. The process of forming a positive image which comprises developing a latent negative image in a photosensitive layer comprising a silver halide emulsion by substantially uniformly distributing throughout said photosensitive layer while excluding actinic light therefrom an alkaline liquid reagent comprising a photographic developer and a silver halide solvent which forms a soluble and reducible silver complex with unexposed silver halide and providing in said photosensitive layer developed silver and, in solution in said liquid reagent, a transferable imagewise distribution of silver complex; transferring from said photosensitive layer, by imbibition and while preventing access of actinic light to said photosensitive layer, at least part of said imagewise distribution of said silver complex to an image-receiving layer superposed with respect to said photosensitive layer in such close proximity as to receive a depthwise diffusion of liquid from said photosensitive layer without appreciably disturbing the imagewise distribution of said dissolved silver complex in said liquid reagent; while still excluding actinic light from said photosensitive layer and without disturbing said close proximity of said emulsion layer to said image-receiving layer, developing with said developer the silver of said complex in said image-receiving layer whereby to provide a positive image in silver of said latent image, said silver halide being in excess of that which is transformed to said complex by said silver halide solvent and said developer being in excess of that required to develop the silver images in both said photosensitive layer and said receiving layer; substantially uniformly exposing said photosensitive layer to actinic light; retaining said photosensitive layer and said image-receiving layers in said superposed relation to permit developer to be accumulated in said photosensitive layer by imbibition and to at least partially develop silver halide therein which has been fogged by said uniform exposure whereby said accumulated excess de-

veloper is oxidized; and then separating said image-receiving layer from said photosensitive layer.

3. A transfer process as defined in claim 1 wherein the photosensitive layer is characterized as having a greater thickness than said image-receiving layer whereby to facilitate drying of the image-receiving layer after formation of the reversed image therein and before the image-receiving layer is separated from said emulsion layer.

4. A transfer process as defined in claim 1 wherein the photosensitive layer is characterized as being formed of a material which is more highly permeable to said liquid reagent than is the material of said image-receiving layer whereby to facilitate drying of the image-receiving layer after formation of the reversed image therein and before the image-receiving layer is separated from said emulsion layer.

5. A transfer process as defined in claim 1 wherein the photosensitive layer is characterized as having a greater thickness than said image-receiving layer and is formed of a material which is more highly permeable to said liquid reagent than is the material of said image-receiving layer whereby to facilitate drying of the image-receiving layer after formation of the reversed image therein and before the image-receiving layer is separated from the photosensitive layer.

6. A transfer process as defined in claim 1 wherein said photosensitive layer comprises a relatively thick layer of unhardened gelatin and wherein said image-receiving layer comprises a layer of hardened gelatin which is considerably thinner than said photosensitive layer.

EDWIN H. LAND.

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Certificate of Correction

Patent No. 2,500,421

March 14, 1950

EDWIN H. LAND

It is hereby certified that errors appear in the printed specification of the above numbered patent requiring correction as follows:

Column 4, line 53, for "plastice" read *plastic*; column 5, line 23, after the word "will" insert *give*; column 11, line 25, for "photosensitive" read *photosensitive*; column 12, line 66, list of references cited, for "714,428" read *716,428*;

and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 15th day of August, A. D. 1950.

[SEAL]

THOMAS F. MURPHY,
Assistant Commissioner of Patents.