Oct. 23, 1951 E. H. LAND 2,572,357

PHOTOGRAPHIC PRODUCT COMPRISING A FLUID PROCESSING AGENT AND APPARATUS FOR USE IN CONNECTION THEREWITH

Filed July 13, 1945 2 SHEETS—SHEET 1

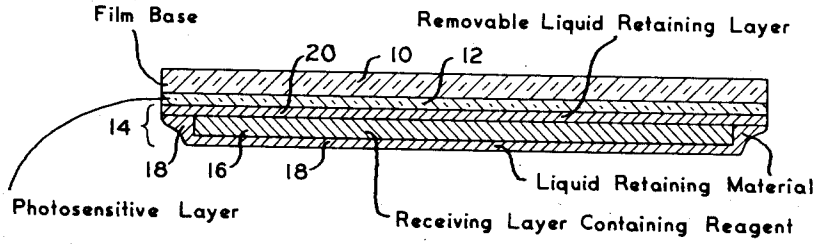


FIG. 1

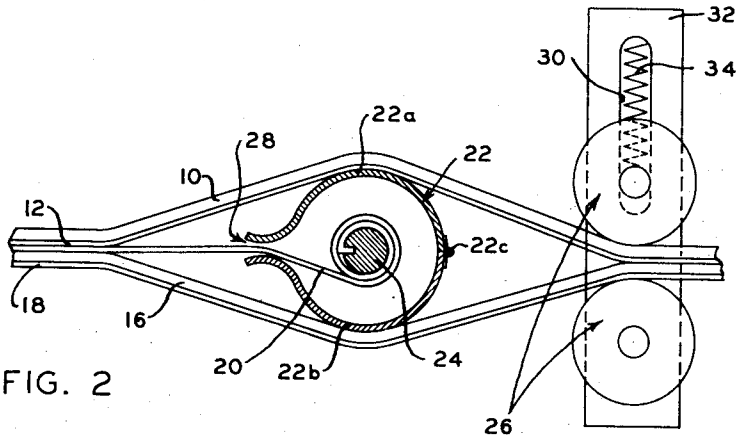


FIG. 2

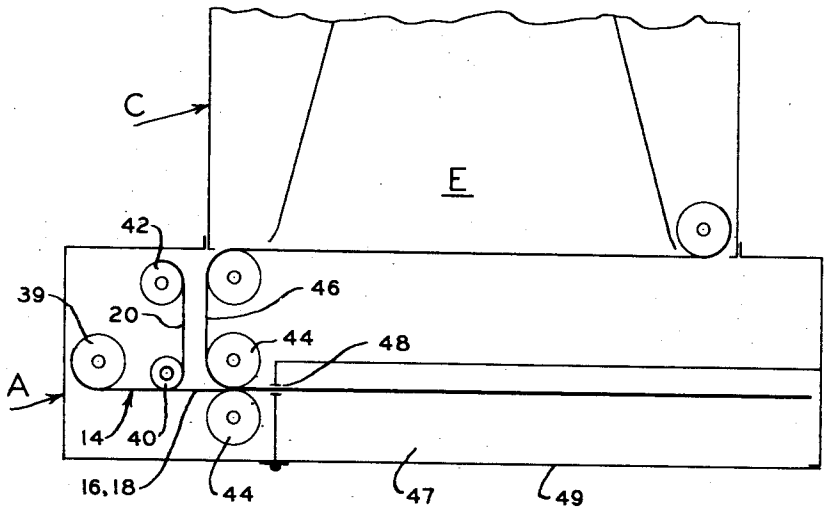


FIG. 3

INVENTOR.
Edwin H. Land
BY
Donald L. Brown
Attorney

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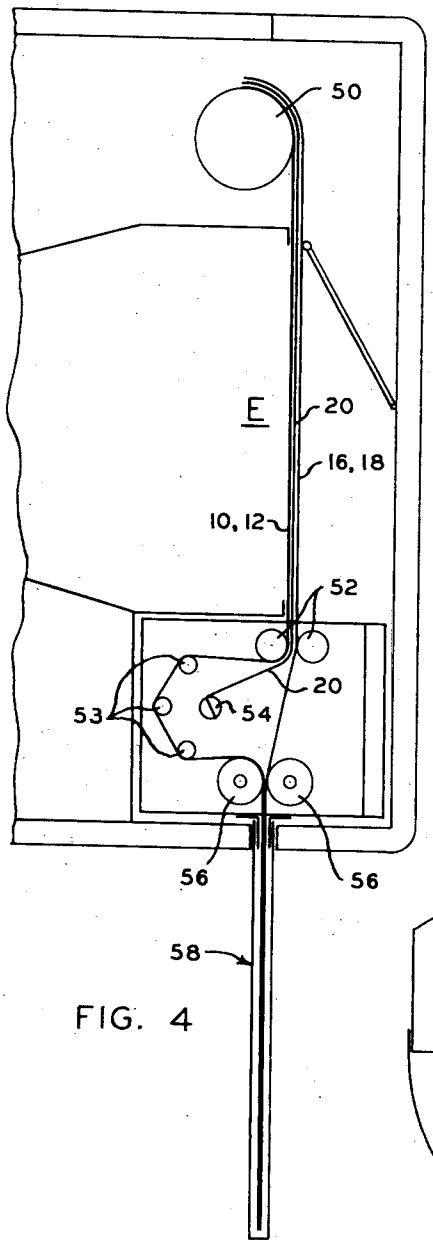
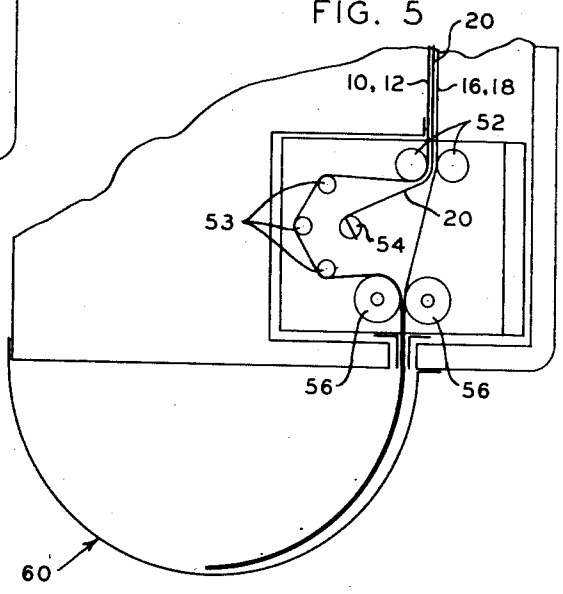


FIG. 4

FIG. 5



INVENTOR.
Edwin H. Land
BY
Donald L. Bloux
Attorney

Patented Oct. 23, 1951

2,572,357

UNITED STATES PATENT OFFICE

2,572,357

PHOTOGRAPHIC PRODUCT COMPRISING A FLUID PROCESSING AGENT AND APPARATUS FOR USE IN CONNECTION THEREWITH

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass., a corporation of Delaware

Application July 13, 1945, Serial No. 604,839

30 Claims. (Cl. 95—13)

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This invention relates to photography, and more particularly to materials and apparatus useful in connection with the formation of fixed positive images of the subject matter to which a photosensitive layer has been exposed.

One object is to provide novel materials whereby a fixed positive print may be formed of the subject matter of a latent image without further photoexposure and with the use of but a single photographic reagent mixture.

A further object is to provide a novel camera apparatus wherein the above materials may be utilized and a fixed positive image of predetermined subject matter may be obtained shortly after a photosensitive layer is exposed in said camera apparatus to said subject matter.

Still another object is to provide a novel composite film comprising, in combination, a photosensitive layer and the materials required for forming a fixed positive image of the subject matter of a latent image in said layer.

Another object is to provide a novel film means comprising a permeable layer and means containing a liquid material out of contact with said layer, said means being so constructed that said liquid material may be selectively released therefrom over a predetermined area of said permeable layer.

Still another object is to provide a novel multiply photographic film comprising a photosensitive layer wherein a latent image may be formed and a liquid-containing layer adapted, when brought into face-to-face contact with said photosensitive layer, to develop said image.

A further object of the invention is to provide a novel film of the above type wherein a fixed positive image of the subject matter of said latent image is formed in the liquid-containing layer when the latter layer is brought into contact with the photosensitive layer.

A further object is to provide a novel sheet material comprising means releasably containing a liquid reagent.

A still further object is to provide a novel sheet material of the above character comprising a removable liquid-retaining sheet.

Still another object is to provide a novel composite sheet material comprising a liquid reagent and a liquid-retaining member, said material being of such character that when said retaining member is removed and the remainder of the sheet is brought into face-to-face contact with a developable photosensitive emulsion containing a latent image, a fixed positive of said latent image is formed in said sheet material.

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A still further object of the invention is to provide a novel camera apparatus comprising means for removing one ply from a multi-ply film and for bringing the remainder of said film into face-to-face contact with a photosensitive layer which has been exposed in said camera apparatus.

Another object is to provide a novel camera apparatus of the above character wherein a film comprising three plies may have the central ply of the three removed subsequent to the exposure of said film in said apparatus and the other two of said plies brought into face-to-face contact with one another.

Other objects of the invention will in part be obvious and will in part appear elsewhere.

The invention accordingly comprises the product possessing the features, properties and the relation of components, and the apparatus possessing the construction, combination of e ements and arrangement of parts which are exemplified in the following detailed description, and the scope of the application of which will be indicated in the claims.

For a fuller understanding of the nature and objects of the invention, reference should be had to the accompanying drawings wherein:

Figure 1 is a somewhat diagrammatic, transverse sectional view of one type of film means comprehended by the present invention, the thicknesses of the several layers of said film means being exaggerated for the purpose of clarity;

Fig. 2 is a somewhat diagrammatic, longitudinal sectional view, with parts shown in elevation, of one form of apparatus which may be utilized in combination with the film means of Fig. 1 for producing a fixed positive image;

Fig. 3 is a diagrammatic view of a camera apparatus wherein the novel liquid-containing sheet material of the present invention may be utilized to provide a fixed positive image of subject matter to which a photosensitive film in said camera has been exposed;

Fig. 4 is a view similar to Fig. 3 of still another type of camera apparatus which may be employed in conjunction with the film means of Fig. 1; and

Fig. 5 is a view similar to Fig. 3 of a modification of the camera means of Fig. 4.

In a preferred form, the present invention comprises a multilayer sheet material including among the several layers thereof a layer of developable photosensitive material such, for example, as a silver halide, mixed silver halide, or silver mixed halide emulsion, a layer of permeable

and relatively porous material in or on which a positive image may be formed and a removable layer of material separating said first-named layers. The image-receiving layer preferably contains a liquid reagent which is adapted, upon permeation of said photosensitive layer, to form a fixed positive image in or on said receiving layer of the subject matter of any latent image formed in said photosensitive layer and the separating layer is preferably formed of a material which is impervious to the vapors of the liquid material of said reagent and to oxygen. The reagent preferably contains a developer and is adapted to form in a photosensitive layer containing a latent image an image-forming component for giving a positive image of the subject matter of said latent image, preferably in an adjoining layer of suitably selected material. Suitable reagents for this purpose are disclosed in my copending applications Serial No. 539,550, filed June 9, 1944, entitled Photographic Product, Process and Apparatus (now abandoned and replaced by application Serial No 64,870 filed December 11, 1948, which issued as Patent No. 2,543,181 on February 27, 1951), and Serial No. 561,696, filed November 3, 1944, entitled Photographic Product and Process (now Patent No. 2,500,421, issued March 14, 1950). Although it is preferable to employ a relatively nonviscous reagent, for example one having a viscosity approximately the same as water, it is also possible to utilize a reagent of a higher viscosity which includes, in addition to the other reagent ingredients, a suitable thickening agent such as a film-forming material. Examples of reagents of the latter type are disclosed fully in my copending application Serial No. 576,254, filed February 5, 1945, entitled Photographic Process, Apparatus and Product (now abandoned and replaced by applications Serial No. 728,983, filed February 17, 1947, for Photographic Product and Composition and Serial No. 7,795, filed February 12, 1948 for Photographic Process.)

Referring to Fig. 1, there is illustrated by way of example one form of film means comprehended by the invention, and, as shown, said film means comprises a suitable transparent film base **10**, for example a cellulosic film base such as cellulose acetate, cellulose nitrate, cellulose acetate butyrate, or cellulose acetate propionate, which serves as a support for a photosensitive emulsion **12** comprising a silver halide.

It is to be understood that the term "photosensitive emulsion comprising a silver halide" as used herein and in the claims is intended to be generic to an emulsion of a single silver halide salt, an emulsion of mixed silver halide salts, an emulsion of a silver mixed halide salt, or an emulsion of a mixture of the last-named salt with any of the others.

A novel liquid-containing, composite sheet **14** adapted to provide the receiving layer in which the positive image is to be formed, as well as the liquid reagent for forming said positive image, is mounted adjacent layer **12**, and as shown comprises a layer of water-permeable and preferably substantially porous material **16** within whose pores there is contained the liquid reagent. Examples of suitable receiving layers for this purpose are regenerated cellulose, polyhydroxy alkanes such as polyvinyl alcohol, sodium alginate, relatively water-permeable 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 starches, and mixtures of these materials where the latter are compatible.

A layer or coating **18** of material which is impervious to the vapors of the liquid material in the reagent, and preferably substantially impervious to oxygen, is provided on the side of receiving layer **16** remote from photosensitive layer **12**, said layer or coating being formed, for example, where the reagent comprises water as the solvent, of a water-vapor-impervious plastic such as polyethylene or ethyl cellulose, or of such other water-vapor-impervious and oxygen-impervious materials as paraffin, metal foil or metal foil coated with paraffin. A silver foil coated on the inside surface, i. e., the surface adjacent layer **16**, with a material inert to an alkali, as for example ethyl cellulose or a mixture of ethyl cellulose and paraffin, has proven satisfactory for this purpose.

Separating receiving layer **16** from photosensitive layer **12** is a sheet **20** formed, for example, of any of the above-mentioned materials which may be used for layer or coating **18**. Sheet **20** is preferably connected to layer or coating **18** so that the two form a container for receiving layer **16** whereby the solvent or reagent contained in said layer is retained without evaporation and loss, and whereby the reagent, if susceptible to oxidation, is prevented from being oxidized by exposure of the composite film to the atmosphere. It is preferable to have layer or coating **18** covering not only the bottom face of receiving layer **16**, but extending on both edges of said receiving layer to engage the bottom face of sheet **20**. The latter may be secured to said coating as by the application of heat and/or pressure or an adhesive.

To form a fixed positive image of predetermined subject matter, layer **12** of the novel composite film has a latent image of said subject matter formed therein by being exposed thereto in a camera. Thereafter, in the absence of light actinic to said layer, as, for example, within the camera, or in the dark room, sheet **20** is removed from between photosensitive layer **12** and receiving layer **16**, and the latter are brought into face-to-face contact with one another as by being passed through a pair of pressure rollers. The reagent contained in layer **16** is thus caused to permeate at least the adjacent surface portions of photosensitive layer **12** and develops the latent image in said photosensitive layer. At substantially the same time, the reagent begins to form in said receiving layer a fixed positive image of the subject matter of said latent image. After a sufficient time has elapsed to form the desired image, layer **16** is separated from layer **12**.

In one form of the invention, the liquid reagent preferably comprises a developer and a substance which is adapted to form a soluble silver complex with the undeveloped silver halide. Examples of reagents of this character are given below by way of illustration, but it is to be expressly understood that any one of a large number of other reagent mixtures may be employed:

Example I

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 II

	Cc.
Kodak developer D–72	100
50% solution of sodium thiosulfate	30
Water	100

With the above solutions, it is possible to obtain a positive image within thirty to sixty seconds from the time the receiving layer containing the reagent is brought face-to-face with the photosensitive layer.

In order to form the novel film means of the present invention, the receiving layer, which may be alpha paper or sodium carboxymethyl cellulose, is preferably first permeated with the reagent solution and then coated with the water-vapor-impervious layer **18**, which may be paraffin, as by having the latter formed on the exposed face and edges thereof while said layer is held on a suitable nonadhering surface such, for example, as a polished surface of a metallic plate. Thereafter, sheet **20**, which may be a paraffin-coated, metal foil, is brought into contact with the uncoated surface of said layer and adhered to the edges of coating **18**, for example, by the application of heat and/or pressure.

A novel arrangement of elements whereby the above-described composite film may be caused, after exposure, to form a positive image of the subject matter to which it was exposed, is illustrated somewhat diagrammatically in Fig. 2. This apparatus, which may be included within a camera or which may be provided as a unit in a dark room, comprises a housing **22** within which a take-up roll **24** is substantially centrally mounted, said roll being drivably connected to a pair of pressure rollers **26** by a drive, such as a friction drive (not shown), which permits differential rotation of the driving and driven members. Housing **22** is preferably provided with a slot **28** parallel to the axis of take-up roll **24**, on the side of said housing remote from pressure rollers **26**, and is preferably split into two sections **22***a* and **22***b*, said sections being secured together by suitable hinge means **22***c* whereby one of said sections may be held stationary while the other is pivoted with respect thereto to facilitate the threading of a film into take-up roll **24**. One of pressure rollers **26** is preferably mounted so that it may be moved axially relative to the other as, for example, by having its shaft mounted in a recess **30** formed in a suitable bracket **32** which also mounts the other of said rollers. To press said rollers together, suitable means such, for example, as spring **34**, is provided.

In operation, sheet **20** of the novel composite film of the invention is preferably threaded into take-up roll **24**, being readily separable from layers **12** and **16** and the portions of the film separated by said sheet are passed on opposite sides of said housing and threaded between pressure rollers **26**. As said pressure rollers are operated, photosensitive layer **12** is pressed into face-to-face contact with receiving layer **16**, and take-up roll **24** is frictionally driven to remove sheet **20** from between said portions. The drive between pressure rollers **26** and take-up roll **24** is such that the latter roll may readily slip relative to rollers **26** in the event the linear velocity of the film portions passing through said pressure rollers tends to become less than the linear velocity of the film as it is wound upon take-up roll **24**. The portions of the film passing through rollers **26** are maintained in assembled position in the absence of light actinic to the photosensitive layer until a positive image has been formed in

layer **16**. Said portions may then be separated from one another, providing a fixed, positive print in the receiving layer of the subject matter of the latent image in the photosensitive layer. Suitable cutting means may be provided adjacent pressure rollers **26** for severing each film frame from the remainder of the film as it completes its travel through said pressure rollers.

Although composite sheet **14** has been described above as comprising part of a unitary photographic film which includes photosensitive layer **12**, it is to be understood that said sheet may be provided as a separate product for use in conjunction with conventional photographic films. A novel arrangement of elements whereby sheet material **14** may be used in conjunction with an exposed photosensitive layer to provide a fixed positive image in a layer of said sheet material of the subject matter of a latent image in said photosensitive layer is shown diagrammatically in Fig. 3. In the form illustrated, said apparatus comprises suitable mechanism for removing the liquid-retaining sheet **20** from a roll **39** of sheet material **14**, as, for example, an idler roller **40** and a take-up roll **42**, the latter being drivably connected by a suitable friction drive, not shown, to a pair of pressure rollers **44**. Rollers **44** are preferably provided adjacent to idler roller **40**, and the liquid-retaining sheet **16** of sheet material **14** without cover sheet **20** is adapted to be fed between said pressure rollers and brought into face-to-face contact with the photosensitive layer of an exposed photographic film **46**. It will be understood that the above-described apparatus may be provided in a dark room or used in a suitable light-tight housing. In the form illustrated, the several elements comprising said mechanism are embodied in an attachment A for a camera C whereby a photographic film **46** may be fed between rollers **44**, as it is metered from exposure position E by the film-driving mechanism of said camera.

It is desirable to embody within or connect to said attachment suitable means wherein the assembly of sheet **16**, **18** and film **46** may be retained in darkness after it passes through rollers **44** and from which said assembly may be removed without exposing the interior of the camera to light. To this end, a chamber **47** is preferably provided adjacent to the pressure rollers and is connected to the interior of the camera by a suitable light-tight recess **48** lined, for example, with a material such as felt. The assembly comprising film **46** and sheet material **16**, **18** is metered into said chamber through said opening and is retained in said chamber during the formation of the positive image. One wall **49** of said chamber is preferably pivotally mounted to serve as a closure, and in closed position does not admit any light into the chamber. However, it may be opened to permit the severance and the removal of the frame of film retained in the chamber. In operation, therefore, the film assembly which is formed between rollers **44** passes through opening **48** into chamber **47** and after the entire frame has passed into said chamber, it is retained therein in the absence of actinic light for such time as is necessary to effect the formation of the positive image, as, for example, thirty seconds. Thereafter wall **49** is pivoted outwardly to open the interior of the chamber and the assembly of sheet materials is severed and removed from the chamber.

A form of camera apparatus wherein the novel

composite film means of Fig. 1 may be utilized is shown diagrammatically in Fig. 4 as comprising means for mounting a roll 50 of said film from which said film may be fed to exposure position E. After being exposed, the film passes between a pair of rollers 52 and is so threaded that central layer 20 thereof is adapted to be wound upon a take-up roll 54 which is connected by means of a friction drive to a pair of pressure rollers 56. Take-up roll 54 is preferably located to one side of the path of travel of liquid-containing sheet 16, 18 as the latter moves from the point at which layer 20 is stripped therefrom to the point at which photosensitive layer 12 of film 10, 12 is brought into contact therewith. As a result of this arrangement, liquid-containing sheet 16, 18, once placed in condition for release of the liquid, does not contact any material except the photosensitive layer of film 10, 12. It is desirable to provide suitable guide means such as a plurality of rollers 53 for film 10, 12 as the latter travels from rollers 52 to rollers 56, avoiding take-up roll 54.

After the separated portions 10, 12 and 16, 18 of the composite films are brought into face-to-face contact between said pressure rollers, the assembly thus formed passes from the main chamber of the camera into a suitable light-tight chamber formed, for example, of a flat, rectangular container 58 detachably secured to the camera. The passage from the main camera chamber into container 58 is effected through an opening which connects said chamber and said container, and which has its walls preferably lined with felt to prevent admission of light into said main chamber whenever said container is removed. After the assembly formed by the separated portions of the film is fed through pressure rollers 56 into container 58 and a sufficient length of time has elapsed to form the fixed positive image in the receiving layer, container 58 is removed from the camera, exposing the assembly comprising the receiving layer and the photosensitive layer. The latter assembly may then be severed from the remainder of the film and the receiving layer separated from the photosensitive layer. Instead of container 58, a suitable semicylindrical container unit 60 may be used as shown in Fig. 5. It is to be expressly understood that any light-tight containing means such, for example, as a flexible bag formed of light-impervious material may also be employed to receive the film assembly as the latter is fed through the pressure rollers.

There is thus provided novel materials whereby a fixed positive print of subject matter to which a photosensitive layer has been exposed may be readily and quickly obtained without further exposure and without the use of baths of fixing agents and other solutions. The materials of the invention may be operatively mounted in a novel camera apparatus and so manipulated therein that a fixed positive image of subject matter to which a photosensitive layer is exposed in said camera is obtained shortly after the exposure, and requires no further treatment.

Since certain changes in the constructions set forth and in the articles which embody the invention may be made without departing from its scope, it is intended that all matter contained within the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. In apparatus of the character adapted to subject a multilayer film to a predetermined processing, said multilayer film comprising three superposed sheet-like portions, said portions comprising an outer portion including a photosensitive layer, another outer portion capable, when pressed into face-to-face contact with said first-named portion, of subjecting the photosensitive layer thereof to a predetermined processing, and a third portion intermediate said outer portions preventing face-to-face contact thereof, said apparatus comprising, in combination, means for removing said intermediate portion, said removing means comprising a take-up roll and a housing wherein said take-up roll is mounted, said housing providing surfaces for guiding the portions of the film on opposite sides of the removed portions around said take-up roll, and means for pressing the portions of the film on opposite sides of the removed portion into face-to-face contact with one another.

2. In apparatus of the character adapted to subject a multilayer film to a predetermined processing, said multilayer film comprising three superposed sheet-like portions, said portions comprising an outer portion including a photosensitive layer, another outer portion capable, when pressed into face-to-face contact with said first-named portion, of subjecting the photosensitive layer thereof to a predetermined processing, and a third portion intermediate said outer portions preventing face-to-face contact thereof, said apparatus comprising, in combination, means for removing said intermediate portion, said removing means comprising a take-up roll and a housing wherein said take-up roll is mounted, said housing providing surfaces for guiding the portions of the film on opposite sides of the removed portions around said take-up roll and comprising a pivotal portion facilitating threading of the film into said take-up roll, and means for pressing the portions of the film on opposite sides of the removed portion into face-to-face contact with one another.

3. In a photographic apparatus, means for mounting a supply of photosensitive material, means for photoexposing successive frames of said supply of photosensitive material, means for mounting a supply of liquid-carrying composite sheet material, said composite sheet material including as three layers thereof a liquid-containing layer which releasably contains a liquid capable of subjecting said exposed frames of photosensitive material to a predetermined processing, a liquid-retaining layer adjacent one surface of said liquid-containing layer and a base layer adjacent the other surface of said liquid-containing layer, both said base layer and said liquid-retaining layer being formed of material substantially impervious to the liquid of said liquid-containing layer and together forming opposite sides of an envelope for said liquid-containing layer, said composite sheet being of a length sufficient to process a plurality of said exposed frames of photosensitive material, means adjacent said supply means for said composite sheet material for engaging said liquid-retaining layer and for stripping the same from said composite sheet as the latter is advanced with respect to said engaging means, thereby exposing the surface of the liquid-containing layer, and means comprising a pair of pressure-applying members between which and with respect to which said photosensitive material, said liquid-containing layer and said base layer are advanced in superposed relation with

said base layer and said photosensitive material constituting the outer layers, said pressure-applying members contacting only the dry surface portions of said outer layers of said superposed materials and subjecting successive increments of said superposed materials to compression to initiate the processing of corresponding increment areas of the photosensitive material.

4. In a photographic apparatus, means for mounting a roll of photosensitive material, means for photoexposing successive frames of said photosensitive material, means for mounting a roll of liquid-carrying composite sheet material, said composite sheet material including as three layers thereof a liquid-containing layer which releasably contains a liquid capable of subjecting said exposed frames of photosensitive material to a predetermined processing, a liquid-retaining layer adjacent one surface of said liquid-containing layer and a base layer adjacent the other surface of said liquid-containing layer, both said base layer and said liquid-retaining layer being formed of material substantially impervious to the liquid of said liquid-containing layer and together forming opposite sides of an envelope for said liquid-containing layer, said composite sheet being of a length sufficient to process a plurality of said exposed frames of photosensitive material, means adjacent said roll mounting means for said composite sheet material for engaging said liquid-retaining layer and for stripping the same from said composite sheet as the latter is advanced with respect to said engaging means, thereby exposing the surface of the liquid-containing layer, said last-named means comprising a stripping roller and a take-up roller, and means comprising a pair of pressure rollers between which and with respect to which said photosensitive material, said liquid-containing layer and said base layer are advanced in superposed relation with said base layer and said photosensitive material constituting the outer layers, said pressure rollers contacting only the dry surface portions of said outer layers of said superposed materials and subjecting successive increments of said superposed materials to compression to initiate the processing of corresponding increment areas of the photosensitive material.

5. In a photographic apparatus, means for mounting a supply of photosensitive material, means for photoexposing successive frames of said supply of photosensitive material, means for mounting a supply of liquid-carrying composite sheet material, said composite sheet material including as three layers thereof a liquid-containing layer which releasably contains a liquid capable of subjecting said exposed frames of photosensitive material to a predetermined processing, a liquid-retaining layer adjacent one surface of said liquid-containing layer and a base layer adjacent the other surface of said liquid-containing layer, both said base layer and said liquid-retaining layer being formed of material substantially impervious to the liquid of said liquid-containing layer and together forming opposite sides of an envelope for said liquid-containing layer, said composite sheet being of a length sufficient to process a plurality of said exposed frames of photosensitive material, means adjacent said supply means for said composite sheet material for engaging said liquid-retaining layer and for stripping the same from said composite sheet as the latter is advanced with respect to said engaging means, thereby exposing the surface of the liquid-containing layer, means comprising a pair of pressure-applying members between which and with respect to which said photosensitive material, said liquid-containing layer and said base layer are advanced in superposed relation with said base layer and said photosensitive material constituting the outer layers, said pressure-applying members contacting only the dry surface portions of said outer layers of said superposed materials and subjecting successive increments of said superposed materials to compression to initiate the processing of corresponding increment areas of the photosensitive material, and means forming a chamber adjacent said pressure-applying members and comprising an aperture through which said superposed materials may be advanced into said chamber after being pressed together by said pressure-applying members, said chamber being substantially opaque to light actinic to said photosensitive material.

6. In a photographic apparatus, means for mounting a supply of photosensitive material, means for photoexposing successive frames of said supply of photosensitive material, means for mounting a supply of liquid-carrying composite sheet material, said composite sheet material including as three layers thereof a liquid-containing layer which releasably contains a liquid capable of subjecting said exposed frames of photosensitive material to a predetermined processing, a liquid-retaining layer adjacent one surface of said liquid-containing layer and a base layer adjacent the other surface of said liquid-containing layer, both said base layer and said liquid-retaining layer being formed of material substantially impervious to the liquid of said liquid-containing layer and together forming opposite sides of an envelope for said liquid-containing layer, said composite sheet being of a length sufficient to process a plurality of said exposed frames of photosensitive material, means adjacent said supply means for said composite sheet material for engaging said liquid-retaining layer and for stripping the same from said composite sheet as the latter is advanced with respect to said engaging means, thereby exposing the surface of the liquid-containing layer, means comprising a pair of pressure-applying members between which and with respect to which said photosensitive material, said liquid-containing layer and said base layer are advanced in superposed relation with said base layer and said photosensitive material constituting the outer layers, said pressure-applying members contacting only the dry surface portions of said outer layers of said superposed materials and subjecting successive increments of said superposed materials to compression to initiate the processing of corresponding increment areas of the photosensitive material, and means forming a chamber adjacent said pressure-applying members and comprising an aperture through which said superposed materials may be advanced into said chamber after being pressed together by said pressure-applying members, said chamber being substantially opaque to light actinic to said photosensitive material, said chamber means comprising a closure member which is movable from closed position to permit access to the interior of said chamber and to the superposed materials contained therein.

7. In a photographic apparatus, means for mounting a supply of photosensitive material, means for successively exposing a plurality of frames of said supply of photosensitive material, means comprising a liquid-carrying sheet con-

taining a liquid processing agent and being capable, when pressed into contact with said photosensitive material, of releasing part at least of said processing agent to process said photosensitive material and a base sheet upon one surface of which said liquid-carrying sheet is mounted, said base sheet being impervious to the liquid of said processing agent and having a sufficient length of said liquid-carrying sheet mounted thereon to process a plurality of said exposed frames, means comprising a pair of pressure-applying members between which and with respect to which said photosensitive material, said liquid-carrying sheet and said base sheet are advanced in superposed relation with said base sheet and said photosensitive material constituting the outer layers, said pressure-applying means contacting only the dry surface portions of said outer layers of said superposed materials and subjecting successive increments of said superposed materials to compression to initiate the processing of corresponding increment areas of the photosensitive material, and means forming a chamber adjacent said pressure-applying members and comprising an aperture through which said superposed materials may be advanced into said chamber after being pressed together by said pressure-applying members, said chamber being substantially opaque to light actinic to said photosensitive material.

8. In a photographic apparatus, means for mounting a supply of photosensitive material, means for successively exposing a plurality of frames of said supply of photosensitive material, means comprising a liquid-carrying sheet containing a liquid processing agent and being capable, when pressed into contact with said photosensitive material, of releasing part at least of said processing agent to process said photosensitive material and a base sheet upon one surface of which said liquid-carrying sheet is mounted, said base sheet being impervious to the liquid of said processing agent and having a sufficient length of said liquid-carrying sheet mounted thereon to process a plurality of said exposed frames, means comprising a pair of pressure-applying members between which and with respect to which said photosensitive material, said liquid-carrying sheet and said base sheet are advanced in superposed relation with said base sheet and said photosensitive material constituting the outer layers, said pressure-applying means contacting only the dry surface portions of said outer layers of said superposed materials and subjecting successive increments of said superposed materials to compression to initiate the processing of corresponding increment areas of the photosensitive material, and means forming a chamber adjacent said pressure-applying members and comprising an aperture through which said superposed materials may be advanced into said chamber after being pressed together by said pressure-applying members, said chamber being substantially opaque to light actinic to said photosensitive material, said chamber means comprising a closure member which is movable from closed position to permit access to the interior of said chamber and to the superposed materials contained therein.

9. In a photographic apparatus, means for mounting a supply of photosensitive material, means for successively exposing a plurality of frames of said supply of photosensitive material, means comprising a liquid-carrying sheet containing a liquid processing agent and being capable, when pressed into contact with said photosensitive material, of releasing part at least of said processing agent to process said photosensitive material and a base sheet upon one surface of which said liquid-carrying sheet is mounted, said base sheet being impervious to the liquid of said processing agent and having a sufficient length of said liquid-carrying sheet mounted thereon to process a plurality of said exposed frames, means comprising a pair of pressure rollers between which and with respect to which said photosensitive material, said liquid-carrying sheet and said base sheet are advanced in superposed relation with said base sheet and said photosensitive material constituting the outer layers, said pressure rollers contacting only the dry surface portions of said outer layers of said superposed materials and subjecting successive increments of said superposed materials to compression to initiate the processing of correspondincrement areas of the photosensitive material, and means forming a chamber adjacent said pressure rollers and comprising an aperture through which said superposed materials may be advanced into said chamber after being pressed together by said pressure rollers, said chamber being substantially opaque to light actinic to said photosensitive material.

10. In a photographic apparatus, in combination, means for mounting a supply of a multilayer film, said multilayer film comprising three superposed sheetlike portions, said portions comprising an outer portion including a photosensitive layer, another outer portion capable, when brought into face-to-face contact with said first-named portion, of subjecting the same to a predetermined processing, and an intermediate portion in the form of a layer separating said outer portions and preventing said processing from taking place, means for holding said film in position for photoexposure, take-up means for stripping said intermediate portion from said outer portions and for storing said intermediate portion, means comprising a pair of pressure-applying members between which said two outer portions are advanced in face-to-face engagement after removal of said intermediate portion, said pressure-applying members so pressing together said two outer portions as to make possible the transfer of processing material from one to the other of said outer portions to effect the processing of the photosensitive layer, and guide means engaging at least one of said outer portions and cooperating with said take-up means and said pressure-applying members to keep the outer portions separated from said take-up means as said outer portions are advanced from the point at which said intermediate portion is stripped therefrom.

11. In a photographic apparatus, in combination, means for mounting a supply of a multilayer film, said multilayer film comprising three superposed sheetlike portions, said portions comprising an outer portion including a photosensitive layer, another outer portion capable, when brought into face-to-face contact with said first named portion, of subjecting the same to a predetermined processing, and an intermediate portion in the form of a layer separating said outer portions and preventing said processing from taking place, means for holding said film in position for photoexposure, take-up means for stripping said intermediate portion from said outer portions and for storing said intermediate portion, means comprising a pair of pressure-applying members between which said two outer

portions are advanced in face-to-face engagement after removal of said intermediate portion, said pressure-applying members so pressing together said two outer portions as to make possible the transfer of processing material from one to the other of said outer portions to effect the processing of the photosensitive layer, guide means engaging at least one of said outer portions and cooperating with said take-up means and said pressure-applying members to keep the outer portions separated from said take-up means as said outer portions are advanced from the point at which said intermediate portion is stripped therefrom, means providing a chamber for containing said pressure-applying members, said take-up means and said guide means, and means providing a light-tight passage in said chamber means through which said outer portions may be discharged from said chamber means as they leave said pressure-applying members.

12. In a photographic apparatus, in combination, means for mounting a supply of a multilayer film, said multiplayer film comprising three superposed sheetlike portions, said portions comprising an outer portion including a photosensitive layer, another outer portion capable, when brought into face-to-face contact with said first-named portion, of subjecting the same to a predetermined processing, and an intermediate portion in the form of a layer separating said outer portions and preventing said processing from taking place, means for holding said film in position for photoexposure, take-up means for stripping said intermediate portion from said outer portions and for storing said intermediate portion, means comprising a pair of pressure-applying members between which said two outer portions are advanced in face-to-face engagement after removal of said intermediate portion, said pressure-applying members so pressing together said two outer portions as to make possible the transfer of processing material from one to the other of said outer portions to effect the processing of the photosensitive layer, guide means engaging at least one of said outer portions and cooperating with said take-up means and said pressure-applying members to keep the outer portions separated from said take-up means as said outer portions are advanced from the point at which said intermediate portion is stripped therefrom, means providing a chamber for containing said pressure-applying members, said take-up means and said guide means, means providing a light-tight passage in said chamber means through which said outer portions may be discharged from said chamber means as they leave said pressure-applying members, and means opaque to light actinic to said film for receiving and containing said outer portions as the latter are discharged through said passage.

13. In a photographic apparatus, in combination, means for mounting a supply of a multilayer film, said multilayer film comprising three superposed sheetlike portions, said portions comprising an outer portion including a photosensitive layer, another outer portion capable, when brought into face-to-face contact with said first-named portion, of subjecting the same to a predetermined processing, and an intermediate portion in the form of a layer separating said outer portions and preventing said processing from taking place, take-up means for stripping said intermediate portion from said outer portions and for storing said intermediate portion, means comprising a pair of pressure-applying members between which said two outer portions are advanced in face-to-face engagement after removal of said intermediate portion, said pressure-applying members so pressing together said two outer portions as to make possible the transfer of processing material from one to the other of said outer portions to effect the processing of the photosensitive layer, and guide means engaging at least one of said outer portions and cooperating with said take-up means and said pressure-applying members to keep the outer portions separated from said take-up means as said outer portions are advanced from the point at which said intermediate portion is stripped therefrom.

14. In a photographic apparatus, in combination, means for mounting a supply of a multilayer film, said multilayer film comprising three superposed sheetlike portions, said portions comprising an outer portion including a photosensitive layer, another outer portion capable, when brought into face-to-face contact with said first-named portion, of subjecting the same to a predetermined processing, and an intermediate portion in the form of a layer separating said outer portions and preventing said processing from taking place, take-up means for stripping said intermediate portion from said outer portions and for storing said intermediate portion, means comprising a pair of pressure-applying rollers between which said two outer portions are advanced in face-to-face engagement after removal of said intermediate portion, said pressure-applying rollers so pressing together said two outer portions as to make possible the transfer of processing material from one to the other of said outer portions to effect the processing of the photosensitive layer, and guide means engaging at least one of said outer portions and cooperating with said take-up means and said pressure-applying rollers to keep the outer portions separated from said take-up means as said outer portions are advanced from the point at which said intermediate portion is stripped therefrom.

15. In a photographic apparatus, in combination, means for mounting a supply of a multilayer film, said multilayer film comprising three superposed sheetlike portions, said portions comprising an outer portion including a photosensitive layer, another outer portion capable, when brought into face-to-face contact with said first-named portion, of subjecting the same to a predetermined processing, and an intermediate portion in the form of a layer separating said outer portions and preventing said processing from taking place, take-up means for stripping said intermediate portion from said outer portions and for storing said intermediate portion, means comprising a pair of pressure-applying members between which said two outer portions are advanced in face-to-face engagement after removal of said intermediate portion, said pressure-applying members so pressing together said two outer portions as to make possible the transfer of processing material from one to the other of said outer portions to effect the processing of the photosensitive layer, and guide means engaging at least one of said outer portions and cooperating with said take-up means and said pressure-applying members to keep the outer portions separated from said take-up means as said outer portions are advanced from the point at which said intermediate portion is stripped therefrom, said take-up means comprising a

take-up roll and said guide means constituting a housing for said take-up roll.

16. In a photographic apparatus, in combination, means for mounting a supply of a multilayer film, said multilayer film comprising three superposed sheetlike portions, said portions comprising an outer portion including a photosensitive layer, another outer portion capable, when brought into face-to-face contact with said first-named portion, of subjecting the same to a predetermined processing, and an intermediate portion in the form of a layer separating said outer portions and preventing said processing from taking place, take-up means for stripping said intermediate portion from said outer portions and for storing said intermediate portion, means comprising a pair of pressure-applying members between which said two outer portions are advanced in face-to-face engagement after removal of said intermediate portion, said pressure-applying members so pressing together said two outer portions as to make possible the transfer of processing material from one to the other of said outer portions to effect the processing of the photosensitive layer, and guide means engaging at least one of said outer portions and cooperating with said take-up means and said pressure-applying members to keep the outer portions separated from said take-up means as said outer portions are advanced from the point at which said intermediate portion is stripped therefrom, one of said outer portions of the film being caused by said cooperation to travel directly from the point at which the intermediate portion is stripped therefrom to the pressure-applying members without contacting other elements of the film or apparatus.

17. A storable externally dry product for subjecting a photographic, photosensitive element to a liquid treatment, said photosensitive element having as its photosensitive material a heavy metal salt capable of forming a latent image upon photoexposure and capable of being developed to produce a visible image comprising the metal of said salt, said product comprising a liquid-containing sheet which is liquid-permeable and has liquid substantially uniformly distributed therethrough so that each unit area thereof contains an amount of liquid sufficient to effect a transformation of an image in an equivalent unit area of a photographic, photosensitive layer, said liquid including a reducing agent for developing an exposed portion of said photosensitive element by reducing exposed heavy metal salt and a pair of layers having their longitudinal axes substantially parallel to the longitudinal axis of said liquid-containing sheet and impervious to the liquid contained in said sheet, said impervious layers being superposed on opposite sides of said sheet and being wider than said sheet so as to project transversely beyond the edges of said sheet, the transversely projecting portions of said layers being sealed together by a stripping bond along the edges of said sheet to form an envelope for said sheet, one of said impervious layers being strippable, lengthwise and a portion at a time, from the other of said layers and from said liquid-containing sheet and being in substantial contact with a surface of said liquid-containing sheet, the stripping of a portion of said strippable layer exposing a substantially equivalent length of said liquid-containing sheet for direct contact with a photosensitive element and for depthwise transfer of said liquid to said element.

18. A storable externally dry product for processing a photographic silver halide element, said product comprising a liquid-containing sheet which is liquid-permeable and has liquid substantially uniformly distributed therethrough in an amount such that each unit area thereof contains sufficient liquid to provide all of the liquid required for the processing of a latent image in an equivalent unit area of a photosensitive silver halide element, said liquid including at least one photographic reagent from the class consisting of the silver halide developers and the silver halide fixers, and a pair of layers having their longitudinal axes substantially parallel to the longitudinal axis of said liquid-containing sheet and impervious to the liquid contained in said sheet, said impervious layers being superposed on opposite sides of said sheet and being wider than said sheet so as to project transversely beyond the edges of said sheet, the transversely projecting portions of said layers being sealed together by a stripping bond along the edges of said sheet to form an envelope for said sheet, one of said impervious layers being strippable, lengthwise and a portion at a time, from the other of said layers and from said liquid-containing sheet and being in substantial contact with a surface of said liquid-containing sheet, the stripping of a portion of said strippable layer exposing a substantially equivalent length of said liquid-containing sheet for direct contact with a photosensitive, silver halide element and for depthwise transfer of said liquid to said element.

19. The product of claim 18 wherein a silver halide developer is dissolved in the liquid in the sheet.

20. The product of claim 19 wherein the liquid-containing sheet is a paper and the liquid is an alkaline aqueous solution of the silver halide developer.

21. The product of claim 18 in which the liquid in the liquid-containing sheet contains a silver halide solvent and a silver halide developer and the liquid-containing sheet is capable of serving as a receiving layer for a silver image.

22. A photographic product comprising a photographic, photosensitive element and a liquid-containing element superposed on and substantially coextensive with said photosensitive element, said photosensitive element comprising as its photosensitive material a heavy metal salt capable of forming a latent image upon photoexposure and capable of development to produce a visible image comprising the metal of said salt, said salt being soluble in a photographic fixing solvent, said liquid-containing element comprising a liquid-containing sheet which is liquid-permeable and has liquid substantially uniformly distributed therethrough so that each unit area thereof contains an amount of liquid sufficient to effect a transformation of an image in an equivalent unit area of said photosensitive element and a pair of layers having their longitudinal axes substantially parallel to the longitudinal axis of said liquid-containing sheet and impervious to the liquid contained in said sheet, said impervious layers being superposed on opposite sides of said sheet and being wider than said sheet so as to project transversely beyond the edges of said sheet, the transversely projecting portions of said layers being sealed together by a stripping bond to form an envelope for said sheet, one of said impervious layers being in substantial contact with a surface of said liquid-containing sheet and with said photosensitive

element, said last-named impervious layer being strippable, lengthwise and a portion at a time, from said liquid-containing element so as to permit the uncovered portion of said liquid-containing sheet to contact said photosensitive element and to transfer liquid thereto, said product having positioned therein photographic processing material, including a reducing agent, capable of developing an image in said photosensitive element and in sufficient amount to effect such development, said processing material being rendered effective upon transfer of liquid from said liquid-containing sheet to said photosensitive element to carry out said development in said element.

23. A photographic product comprising a photographic, photosensitive, silver halide element and a liquid-containing element superposed on and substantially coextensive with said photosensitive element, said liquid-containing element comprising a liquid-containing sheet which is liquid-permeable and has liquid substantially uniformly distributed therethrough so that each unit area thereof contains an amount of liquid sufficient to effect a transformation of an image in an equivalent unit area of said photosensitive element and a pair of layers having their longitudinal axes substantially parallel to the longitudinal axis of said liquid-containing sheet and impervious to the liquid contained in said sheet, said impervious layers being superposed on opposite sides of said sheet and being wider than said sheet so as to project transversely beyond the edges of said sheet, the transversely projecting portions of said layers being sealed together by a stripping bond to form an envelope for said sheet, one of said impervious layers being in substantial contact with a surface of said liquid-containing sheet and with said photosensitive element, said last-named impervious layer being strippable, lengthwise and a portion at a time, from said liquid-containing element so as to permit the uncovered portion of said liquid-containing sheet to contact said photosensitive element and to transfer liquid thereto, said product having positioned therein photographic processing material, including at least one reagent from the class consisting of the silver halide developers and the silver halide fixers for processing said silver halide element, said material being rendered effective upon transfer of liquid from said liquid-containing sheet to said silver halide element to process the latter element.

24. The product of claim 23 wherein the processing material develops the silver halide element and provides an image by transfer on the liquid-containing sheet.

25. The product of claim 22 wherein the photosensitive element comprises a silver halide layer and the photographic processing material includes a silver halide developer.

26. The product of claim 25 wherein the silver halide developer is dissolved in the liquid in the sheet.

27. The product of claim 26 wherein the sheet is a paper and the liquid is an alkaline aqueous solution of the silver halide developer.

28. The product of claim 23 wherein the processing material includes a silver halide solvent as well as the silver halide developer, and the sheet is capable of serving as a receiving layer for a silver image.

29. The product of claim 28 wherein the developer and solvent are dissolved in the liquid in the sheet.

30. The product of claim 29 wherein the liquid is an aqueous alkaline solution of the developer and the solvent, and the sheet is a paper.

EDWIN H. LAND.

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