Feb. 3, 1953 E. H. LAND 2,627,459

PHOTOGRAPHIC FILM UNIT HAVING A FRANGIBLE FLUID CONTAINER THEREIN

Filed Jan. 7, 1950

FIG. 1

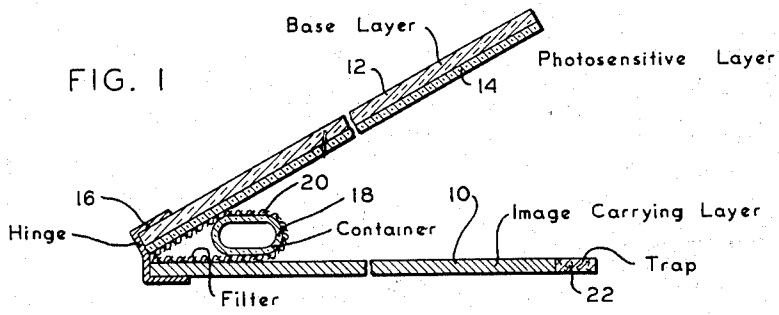


FIG. 2a

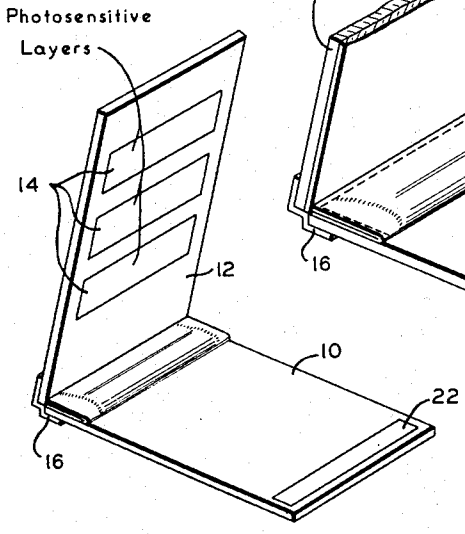


FIG. 2

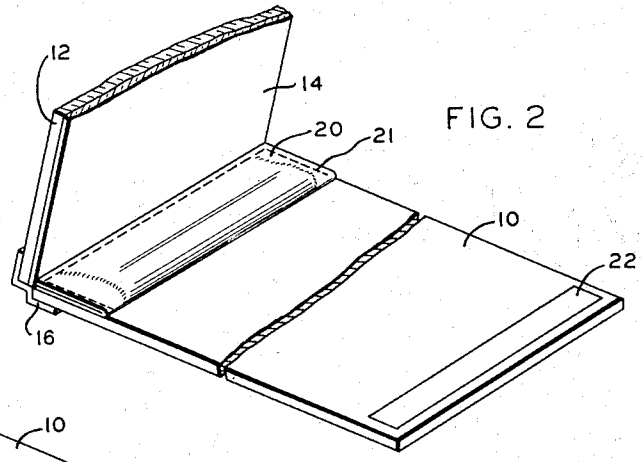
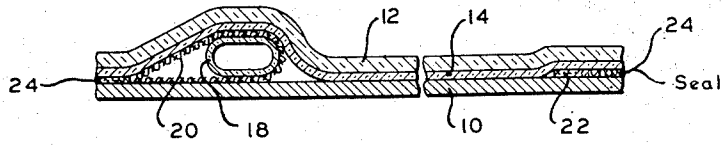


FIG. 3



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PHOTOGRAPHIC FILM UNIT HAVING A FRANGIBLE FLUID CONTAINER THEREIN

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Application January 7, 1950, Serial No. 137,393

16 Claims. (Cl. 95—8)

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This invention relates to photography and more particularly to novel, composite photographic film units.

This application is a continuation-in-part of my copending application Serial No. 657,367, filed March 27, 1946, for "A Photographic Film Unit Having a Frangible Fluid Container Therein," now abandoned.

One of the objects of the invention is to provide a novel composite photographic film unit comprising a plurality of layers, and novel containing means for a fluid composition mounted in operative relationship to several of said layers, said means being constructed of a frangible material and adapted, on the application of a compressive force thereto, to be fractured, thereby releasing the fluid contained therein for spreading between several of said layers.

Another object is to provide a novel, composite photographic film unit comprising at least a photosensitive layer and an image-carrying layer and novel fluid-containing means of a frangible material mounted in operative relationship with respect to said layers so that when said container is fractured by the application of a compressive force thereto, said fluid will be spread between said layers.

A further object is to provide a composite photographic film unit comprising a photosensitive layer and an image-carrying layer and a frangible container mounted therebetween, said container having therein a liquid composition comprising a developer and a film-forming substance, and said container being adapted, on the application of a compressive force thereto, to be fractured, thereby releasing the liquid for spreading between said photosensitive and said image-carrying layers.

A still further object is to provide a novel, composite film unit comprising at least a photosensitive layer carrying thereon a photosensitive material, another layer, a frangible container for a fluid composition mounted between said layers, and a seal for the adjacent edge portions of said photosensitive layer and said other layer, said seal and said layers being substantially impervious to the fluid in said container.

Still a further object of the present invention is to provide fluid-containing means of the type described above which is enclosed in an envelope and secured thereby between two layers of said composite film.

Another object is to provide such fluid-containing means enclosed in an envelope which is adapted to retain the fragments of said means

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after the application of a compressive force thereto.

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

For a fuller understanding of the invention, reference should be had to the following detailed description, taken in connection with the accompanying drawing, wherein:

Figure 1 is an exaggerated, sectionl view of one form of the composite film comprehended by the present invention;

Fig. 2 is an exaggerated, perspective view of the composite film of Fig. 1 showing more details of the invention;

Fig. 2*a* is an exaggerated, perspective view of an alternative form of the composite film shown in Fig. 2; and

Fig. 3 is an exaggerated, sectional view of the present invention incorporated in a sealed film unit which may be part of a roll of film.

The composite film of the present invention is particularly adapted for use with the materials disclosed in my copending application Serial No. 578,379, filed February 17, 1945, for "Photographic Products," now abandoned and whose subject matter is now disclosed in my copending application Serial No. 64,870, filed December 11, 1948, for "Photographic Product Comprising a Rupturable Container Carrying a Photographic Processing Liquid," now Patent No. 2,543,181, and for other novel materials and processes hereinafter described.

The product of one form of the present invention comprises a composite film having therein a frangible container. In a preferred form there is provided a photosensitive layer mounted on a base layer, an image-carrying layer, and a frangible container for a liquid composition positioned between said layers. Said liquid composition is preferably viscous and preferably contains therein a developer and a film-forming material. The liquid composition also preferably contains a substance which can react with the unexposed portions of the photosensitive layer to form therewith soluble image-forming complexes.

The fluid developer used in the present invention is held in containers preferably formed of glass, and preferably mounted transversely of the film, one container to each area in which an image is to be formed. The length of the container is preferably equal to the width of the image area. If the film is provided in roll form the containers may be mounted at intervals along the film adjacent each area in which an image is to be formed, or one container may be provided for

several image areas. If the film is supplied in the form of a film pack, one container is provided for each sheet. The container is preferably formed of glass, but a brittle plastic such as polystyrene may be used. The container should be water- and air-impervious and also impervious to the fluid composition. Portions of said container may be weakened, as by etching or scoring the surface with a glass cutter, so that the container breaks more readily into large, regular pieces when subjected to compression.

In the use of such a composite film, the photosensitive layer is exposed to create therein a latent image. The film is then processed and the container broken as, for example, by putting the assembly through a pair of pressure rollers. The viscous liquid developing composition is spread by the pressure rollers between the photosensitive layer and the image-carrying layer, forming an image-receiving layer. This image-receiving layer is created by the action of the film-forming substance, which, during the processing of the composite film, is converted from a fluid to a solid. The latent image is developed and the positive image-forming complexes are created by reaction of the liquid composition with the unexposed portions of the photosensitive layer and are transferred from the photosensitive layer to the image-receiving layer where the positive image is formed.

By the use of the novel containing means of the present invention, an air- and gas-tight reservoir is provided for a fluid composition. The container is incapable of leaking while in the camera, and releases the fluid completely and immediately when broken. Because of the rigidity of glass, of which the container is preferably made, it will withstand considerable pressure without rupturing. Also, due to the protective function of the envelope in which the container is enclosed, no special care is required in handling the container. There is no danger that the container will disintegrate if not used at once. The fluid is protected from moisture and air, and therefore is not subject to decomposition.

Referring now to Fig. 1, there is shown one form of the composite film of the present invention, and, as illustrated, said film comprises an image-carrying layer 10 having thereon an area designated as an image area. There is also provided a base layer 12 having thereon a photosensitive layer 14. There is provided a hinge 16 which joins the image-carrying layer 10 with the base layer 12. Positioned between the photosensitive layer 14 and the image-carrying layer 10 is a container 18 for the liquid composition. The container 18 is formed of a frangible material, preferably glass. This container is enclosed in a fabric envelope 20. The envelope secures the container 18 to the image-carrying layer 10 and acts as a filter to retain the fragments of the container after it has been broken, while allowing the liquid therein to be expelled and spread between the photosensitive layer 14 and the image-carrying layer 10. At the opposite end of the image-carrying layer from the container 18 there is provided a trap 22, adapted to receive and hold any excess of the liquid composition which is not used in the processing of the film.

The image area on the image-carrying layer is defined as that portion which is adapted to receive a final positive print, including a sufficient area to constitute a frame for the image. When the photosensitive layer is smaller than the image-carrying layer, the image area is substantially the same size as the photosensitive layer.

The base layer 12 is preferably made of a cellulosic film base such as cellulose acetate, cellulose nitrate, or cellulose actate butyrate. The photosensitive layer 14 preferably comprises an emulsion of a silver halide, or of a mixture of silver halides, or of a mixed silver halide. The image-carrying layer 10 is preferably made of baryta paper, paper, hardened gelatin or some similar substance. It is preferably permeable to some of the liquids in the liquid composition, but is not so permeable as to allow said liquids to escape therethrough. The liquid composition in the container 18 preferably comprises a developer such as hydroquinone, a film-forming substance such as sodium carboxymethyl cellulose, and a substance adapted to form from a latent photosensitive image a positive image-forming component. This latter substance, in a preferred form of the invention, is sodium thiosulfate. There may also be included in this liquid composition other substances such as a preservative and an alkali, and water to carry all of the above-named substances in solution.

In the use of the invention as described in Fig. 1, the photosensitive layer 14 is exposed to actinic light, as in a camera, by causing a relative movement between layers 10 and 14 so that the photosensitive layer can be exposed from the side thereof normally adjacent layer 10. This exposure creates a developable latent image in the photosenstive layer. The film unit is then run through pressure means such as a pair of pressure rollers, the container end of the film going first, the rollers bringing the layers 10 and 14 together. As the film unit passes through the pressure rollers, the container 18 is broken, the liquid composition passes through the envelope 20, and the envelope acts as a filter to retain the fragments of the container. The liquid composition is then spread uniformly, between the photosensitive layer 14 and the image-carrying layer 10, by the pressure rollers. As the fluid spreads between these two layers, it forms a dimensionally stable film, which is known as the image-receiving layer. The developer in the liquid composition develops the latent image in the photosensitive layer and the substance, such as sodium thiosulfate, forms, with the unexposed silver halide, positive image-forming complexes which are transported from the photosensitive layer to the image-receiving layer where a positive image of the subject matter of the latent image is formed. After time has been allowed for the above-mentioned processes to take place, the base layer and the photosensitive layer may be stripped from the image-receiving layer to reveal the positive image.

The trap 22 may be formed in a number of ways, such as by providing a large pocket in the trapping end of the film unit or by forming a series of small pockets therein. It may also be formed of a porous material such as felt, cotton or a like substance. It can be formed of a sponge or any other means that will hold the liquid forced thereinto by the pressure rollers.

Although it is preferred to use a liquid composition containing a film-forming material, this film-forming material forming a dimensionally stable film, the present invention is not limited thereto. It is possible to practice the present invention by using a liquid composition which has no film-forming substance. If such be the case, and the container is broken, the liquid composition is spread between the photosensitive layer 14 and the image-carrying layer 10. The developer develops the latent image and the substance, such

as sodium thiosulfate, creates and transfers the positive image-forming complexes from the photosensitive layer 14 to and within the surface of the image-carrying layer 10. In the latter case, the positive image is formed on and within the surface of the image-carrying layer 10.

It can thus be seen that the image-carrying layer 10 acts either as a support for a substance receiving the image or acts as a receiving layer for the image, depending on whether or not a separate film-forming substance is contained in the liquid composition.

In Fig. 2 there is shown another view of the film unit described in connection with the discussion of Fig. 1. The various arrangements of the elements, when taken in connection with Fig. 1, can be more clearly understood, and the alternative embodiments of the invention will be more apparent.

In Fig. 2, like numbers correspond to like elements of Fig. 1. The envelope 20 is shown as being mounted between the image-carrying layer 10 and the base layer 12. Said envelope may consist of a rectangular piece of cheesecloth folded lengthwise around the container and attached to the image-carrying layer 10, holding the container across said image-carrying layer. The open ends of the envelope are sewed together by stitching 21 and to the image-carrying layer, so that the fragments of the container will remain inside the envelope after the container has been broken and the liquid spread over said layer. The envelope is secured to the image-carrying layer in such a manner that it, and the fragments of the broken glass contained therein, can be detached from the image-carrying layer after the formation of a positive image thereon. It is possible that the edges of the envelope may be closed and secured between the two layers in a single operation, which at the same time joins the photosensitive layer to the image-carrying layer. If the envelope is folded around the container and placed between the two layers, the stitching may extend through the entire film unit, and beyond the fold of the envelope, so that a single line of stitching is enough to fasten the entire unit. It is also possible to seal the envelope adhesively and sew it to the image-carrying layer, or to both seal the envelope and secure it to the image-carrying layer adhesively. It is not essential that the envelope be attached to the image-carrying layer; it may be joined to the photosensitive layer, or to the hinge that joins the photosensitive layer and the image-carrying layer. It is also possible, when the area of the photosensitive layer is less than that of the base layer on which it is mounted, for the envelope to be secured to said base layer. The means by which the envelope is secured between said layers may also replace the hinge 16 shown in Fig. 1. In other words, the line of stitching may pass through all the layers of the composite film and through the envelope and thus hold the film together, making the hinge unnecessary. A firm bond between the envelope and the film material is not necessary as there is no force tending to separate them. The fabric of which the envelope 20 is made is sufficiently coarse to permit the dispersion of the viscous liquid composition, and yet fine enough to retain the fragments of the container. The fabric must be of a type that will not react chemically with the liquid developer. Cotton gauze, or cloth woven of synthetic fibers may be used. It is also possible to use an envelope made of a thermoplastic material, in which case the edges of said envelope may be sealed by the application of heat thereto, or by softening said envelope with a solvent and pressing the edges thereof together. This solvent may also be used to make the edges of the envelope sticky so that the envelope may be sealed and secured to one of the layers in one operation. A substance other than cloth may be used for the envelope. Filter paper, or a similar substance through which the developer may be expelled without chemical change in the developer or disintegration of the envelope, may be used, especially when the liquid composition does not include a film-forming substance and therefore has a lower viscosity.

It is likewise contemplated to make base layer 12 and image-carrying layer 10 from a single sheet of material folded upon itself. In this case, the photosensitive layer is coated on one portion of the single sheet and the other portion acts to hold the final image. In this latter case, the container 18, with the envelope 20, may be suitably secured at the fold of the single sheet.

The film unit of Fig. 2 is used in the same manner as that described in connection with Fig. 1. The photosensitive layer is exposed by partially separating the image-carrying layer 10 from the photosensitive layer. It is also possible to expose the photosensitive layer 14 through the base layer 12 if the base layer be transparent. After exposure, the film unit is processed in the same way as the film unit of Fig. 1, i. e., by passing it through a pair of pressure rollers.

In Fig. 2*a* there is shown an alternate view of the composite film of the type shown in Figs. 1 and 2, and in this figure, like numbers correspond to like numbers in Figs. 1 and 2. In this embodiment of the invention, the container holds enough of the liquid composition, and is so placed, that it will provide for the formation of several positive prints, instead of only one, as in Fig. 1. Several separate sections of photosensitive material 14 may be mounted on the base layer 12, or one continuous sheet of photosensitive material adapted for a number of separate exposures. These sections of photosensitive material are individually exposed and when the entire length of the photosensitive layer has been exposed, the film unit is compressed in the manner described in connection with Fig. 1. The container is fractured and releases enough of the liquid to develop the several latent images, this liquid being spread over all of the separate sections of exposed photosensitive material by a suitable means such as a pair of pressure rollers.

In Fig. 3 an alternative form of the present invention is shown. This form of the invention is particularly advantageous in those cases where a finished positive image is produced in a film unit, and at no time is any separation of any of the portions of the film required either for exposure or for final viewing of the positive image. A photosensitive layer 14, mounted on a base layer 12, and an image-carrying layer 10 are incorporated into a composite sheet material. An envelope 20 having therein a container 18 is mounted between layers 10 and 14, at one end of the area in which a positive print is to be formed. At the other end of the area in which a print is to be formed there is provided a trap 22. The whole film is sealed at its boundaries by a seal 24 of a suitable adhesive.

In the preferred form of this modification of the invention, the image-carrying layer is made of a transparent material such as a water-vapor-

permeable cellophane. The liquid composition is also altered by the addition thereto of a pigment such as titanium dioxide, which will create within the formed film an opaque white barrier. In this case, the base layer 12 may be of a suitable cellulosic film base material such as cellulose acetate, or it may be made of an opaque material such as baryta paper. The whole unit is preferably sealed around its edges so as to prevent the escape of any liquid composition.

In the use of the film unit shown in Fig. 3, the photosensitive layer 14 is exposed through the image-carrying layer 10. The film unit is then run through a pair of pressure rollers, the container end going first. This ruptures the container and spreads the liquid composition uniformly between the photosensitive layer and the image-carrying layer. The developer develops the latent image created by the exposure of the photosensitive layer and the substance, such as sodium thiosulfate, forms, with the unexposed portions of the photosensitive layer, positive image-forming complexes and transfers these complexes to the image-receiving layer which is being formed by the film-forming material. During the creation of the image-receiving layer, the opaque titanium dioxide is embodied therein so that the image-receiving layer is white and opaque. When the positive image is produced in the image-receiving layer, only that portion thereof adjacent the image-carrying layer 10 is visible, and the image-receiving layer forms a white background to this visible positive image when the image is viewed through the transparent image-carrying layer 10. Since the image-carrying layer is water-vapor-permeable, the water vapors will be allowed to escape and the film will dry out rapidly after processing.

In the products hereinbefore described there is provided a container 18 for carrying a liquid in such condition that the liquid may be readily released for the purpose of processing photosensitive layer 14. In the preferred embodiment of the product, photosensitive layer 14 is a silver halide emulsion or the like, that is, an emulsion of a heavy metal salt capable of having a latent image formed therein upon exposure, which latent image may be rendered visible by suitable silver halide developing agents. The liquid released from container 18 cooperates with the emulsion and with image-receiving layer 10 to carry out a transfer process. This transfer process involves the development of a latent image in the photosensitive emulsion and, in one preferred form, the removal from that emulsion of part at least of the undeveloped silver halide as a soluble complex, which soluble complex is transported from the photosensitive layer to form the positive print.

By so forming the products described hereinbefore as to omit therefrom the substance for forming the soluble complex it becomes possible to only develop the photosensitive silver halide emulsion. Similarly, by eliminating the developer and, if necessary, increasing the concentration of the sodium thiosulfate or other substance for forming the soluble complex, it becomes possible to predeterminedly fix out a developed negative by means of the aforementioned liquid-containing products. It is believed to be also evident now that other developable photographic products may constitute the photosensitive layer 14 which is processed, and that the product may carry suitable developing agents and such other liquid as is necessary to render said agents operative to effect the development of the photosensitive layer.

Certain diazonium compounds are destroyed by light and photographic processes involving such compounds as their photographic materials have been used commercially. There are several known ways in which a diazonium salt layer may be exposed and developed to produce a relatively stable image. In each of these processes the treatment of the photosensitive diazonium layer may be accomplished by applying thereto a liquid containing certain developing reagents. (L. P. Clerc, "Photography Theory and Practice," second edition, published 1937 by Pitman Publishing Company, page 444, paragraph 693.)

The products of the present invention may be used in conjunction with, or may comprise as elements thereof, diazonium photosensitive layers. For example, the photosensitive product may be formed by having any of the aforementioned physical structures and the photosensitive layer 14 of said product may have as its photosensitive substance a diazonium compound such as that sold by the Boston Blue Print Company under the name "Blackline #202," and the liquid reagent in the container 18 then preferably comprises, by weight, 4 parts of medium viscosity sodium carboxymethyl cellulose, 100 parts of water and 8 parts of "Blackline" developer #203½ (sold by Boston Blue Print Company and manufactured by Frederick Post Company, Chicago). In the alternative, the photosensitive layer 14 may be obtained by applying to one side of a suitable sheet material a sensitizing solution which consists of 20 grams of chlorostannate of para-diazo-di-N-butyl-aniline, 0.4 gram of Pontacyl Brilliant Blue 2R, and 1 liter of water. The liquid developing reagent in the container 18 then preferably comprises, by weight, 4 parts of medium viscosity sodium carboxymethyl cellulose, 100 parts of water, 5.8 parts of sodium carbonate (monohydrate) and 2.3 parts of phloroglucinol.

The diazonium photosensitive layer may also be obtained by dipping a sheet of paper in a solution of Du Pont Naphthanil Diazo Black B, and the developing solution in container 18 may comprise 1500 parts, by weight, of a 5% water solution of sodium carboxymethyl cellulose, 10 parts of resorcinol and 1 part of sodium hydroxide.

It is also well known that certain ferric salts of organic acids, for example the oxalates, tartrates, and citrates, are reduced to ferrous salts when exposed to light. (L. P. Clerc, "Photography Theory and Practice," second edition, published 1937 by Pitman Publishing Company, page 402, paragraph 621 et seq.; Crowley Patents Nos. 2,093,421, 2,113,423, 2,130,070, 2,130,071, 2,137,015.) A considerable number of photographic processes depend for their functioning on this photochemical phenomenon. It is known in connection with these iron salts that any reagent that will differentiate between ferric and ferrous salts can be used to develop the barely visible image formed by the photochemical reduction of the ferric salt into an image which is very easily visible. Examples of such developing reagents are potassium ferricyanide, potassium ferrocyanide, tannins, gallic acid, B-naphthoquinone-sulphonic acid, silver salts, platinum and palladium salts. It is believed to be now apparent to one skilled in the art that

the photo-responsive ferrous salts may constitute the photosensitive material of the photosensitive layer 14, and the liquid in the container 18 may include or dissolve in its travel to the photosensitive layer any one of the aforementioned developing reagents for distinguishing between the ferric and ferrous salts and producing the easily visible image from the very light image that is originally obtained by the photoexposure of the iron salts.

Broadly, the products of the present invention may comprise, or may be used with, any photographic, photosensitive material for the purpose of developing the same. It is to be understood that the invention is not limited to materials sensitive to visible radiation but includes photographic, photosensitive materials sensitive to such other radiation as X-ray, ultraviolet or infrared. For example, the photosensitive unit of Fig. 3 may have layers 10 and 12 thereof opaque to visible and near-visible radiation actinic to layer 14 so that the same may be handled in the daylight without having the photosensitive layer thereof photoexposed. Exposure of the photosensitive layer may be suitably accomplished by means of X-ray or gamma radiation. The resulting product is thus particularly suitable for use in the taking of X-ray pictures and may also be used for detecting and for giving, when processed, a visible indication of the extent of the presence of nuclear radiation, i. e., of radiation such as is associated with X-rays, radium, uranium and other natural or artifical radioactive materials, and particularly gamma radiation, beta radiation and neutron radiation. Photosensitive units of the latter type, suitable for detecting the presence of nuclear radiation, are disclosed in my copending application Serial No. 118,596, filed September 29, 1949, for "Radiation Detection Devices." The novel structures herein described may be suitably adapted for use in similar units.

The term "photographic developing reagent" as used herein is intended to include any reagent which acts to render a visible image more visible, as in the case of the ferric salts, or an invisible image visible, as in the case of the silver halide emulsions. The term "development" is intended to cover the treatment of any photographic, photosensitive material for the purpose of rendering an image formed therein by photoexposure visible or more visible. The photoexposure may, of course, be the result of exposure to any type of radiation actinic to the photosensitive material.

Since certain changes may be made in the above products without departing from the scope of the invention herein involved, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. A photographic product including a photographic reagent for producing a transformation of an image in said product, said product comprising a first liquid-confining layer, a second liquid-confining layer and a container releasably holding a processing liquid and having frangible portions formed of a brittle frangible material, said material being substantially impervious to oxygen, to said liquid and to vapors thereof and being capable of fracture upon application of compression thereto, said container being surrounded by and secured to one of said layers by means of a deformable filter envelope porous to the liquid in said container, said layers and said container being associated together so as to permit said layers to be superposed with said container positioned for releasing its liquid between said layers, said photographic product including a photosensitive portion which is located between said layers when the latter are superposed so that the liquid content of said container, upon release between said layers, permeates said photosensitive portion, at least one of said liquid-confining layers being sufficiently flexible to permit a concentrated externally applied pressure to be transmitted therethrough to cause the fracture of said container and the distribution of the liquid from said container between said liquid-confining layers, said photosensitive portion comprising as its photosensitive material a salt from the class consisting of (*a*) the photosensitive ferric salts, (*b*) the photosensitive diazonium salts, and (*c*) heavy metal salts capable of forming a latent image upon photoexposure and capable of development to produce a visible image comprising the metal of said salt.

2. The product of claim 1 wherein said container is formed of glass and the said porous filter envelope comprises a fabric.

3. The product of claim 1 wherein said photosensitive portion is a silver halide emulsion and said photographic reagent is at least one substance from the class consisting of the silver halide developers and the silver halide solvents.

4. A photographic product containing material, including a photographic reagent, for producing a transformation of an image in said product, said reagent being in an amount sufficient to effect said transformation, said product comprising a liquid-confining layer, including at least a photographic, photosensitive silver halide portion capable of having a latent image formed therein upon photoexposure, another liquid-confining layer, and a container having frangible portions, said container releasably holding a viscous liquid, said liquid being in an amount sufficient for transforming said image in said photosensitive portion, said liquid, upon permeation of said photosensitive portion, rendering said transforming material effective to transform said image, said transforming material including a developer for silver halide dissolved in said liquid, said layers and said container being attached together so as to permit said layers to be superposed, said frangible portions of said container being formed of a brittle frangible material so as to be fractured upon application of compression thereto, said frangible material being substantially impermeable to oxygen, to said liquid and to vapors thereof, said container being surrounded by and secured to one of said layers by means of a deformable filter envelope, said envelope being porous to said liquid, said container, in liquid-releasing position, being laterally disposed to one side of the portions of the layers between which the liquid thereof is to be released with the frangible portions of said container interposed between the layers, at least one of said liquid-confining layers being sufficiently flexible to permit a concentrated externally applied pressure to be transmitted through said liquid-confining layer to cause the fracture of said container and the spreading, by means of said concentrated pressure, of said viscous liquid in a thin layer between said two liquid-confining layers.

5. The product of claim 4 wherein said liquid-confining layers are elongated, and said con-

tainer is elongated, flattened, and has its long dimension extending transversely of the long dimension of said liquid-confining layers.

6. The product of claim 4 wherein said container is formed of glass and said porous filter envelope comprises a fabric.

7. The product of claim 6 wherein said fabric is secured to one of said layers by means of stitching extending through the fabric and the layer.

8. The product of claim 4 wherein said envelope comprises a thermoplastic fabric heat-sealed to one of said liquid-confining layers.

9. The product of claim 4 wherein said liquid includes an alkali and said frangible material comprises an alkali-inert brittle plastic.

10. The product of claim 4 wherein said frangible portions of said container include predetermined weakened portions defining relatively large areas thereof so that fracture of said container gives relatively large pieces incapable of passing through said porous envelope.

11. The product of claim 4 wherein said frangible portions of said container include score lines.

12. A photographic product capable of subjecting a silver halide element to a predetermined processing, said product comprising a rupturable container holding a liquid and a sheet support upon which said container is mounted, said sheet support providing a liquid-receiving area adjacent said container upon which said liquid in said container can be distributed directly from said container, said container having frangible portions formed of a frangible material substantially impervious to oxygen, to said liquid and to vapors thereof, said container being surrounded by and secured to said sheet support by means of a deformable filter envelope porous to the liquid in the container, said product carrying at least one photographic reagent from the class consisting of the silver halide developers and the silver halide solvents, said reagent and said liquid being in sufficient amount and being so located in relation to said liquid-receiving area that the distribution of said liquid over said area disperses said photographic reagent throughout said area in adequate quantity to process an equivalent area of a contiguous silver halide element.

13. The product of claim 12 wherein said photographic reagent is a silver halide developer and said developer is dissolved in the liquid in the container.

14. The product of claim 12 wherein the photographic reagent is a silver halide developer.

15. The product of claim 12 wherein said frangible portions of said container include predetermined weakened portions defining relatively large areas thereof so that fracture of said container gives relatively large pieces incapable of passing through said porous envelope.

16. A photographic product comprising a plurality of rupturable containers, each container holding a liquid having dispersed therein a thickening colloid, and a sheet support upon which said containers are mounted, said containers being spaced lengthwise of said support, the surface of said sheet support, upon which said containers are mounted, having a plurality of liquid-receiving areas, one of said areas being adjacent each of said containers and being greater in area than the area covered by said container, the liquid in each container being sufficient in amount to cover the liquid-receiving area adjacent thereto and to provide thereon a continuous film of said colloid, said product containing a photographic image-transforming reagent, each said container having frangible portions formed of a frangible material, each said container being surrounded by, and secured to, said sheet support by means of a filter envelope, said envelope being porous to said viscous liquid, each container and the portion of said sheet support within the receiving area associated therewith containing said reagent in an amount sufficient to develop a latent image in an area of a silver halide photosensitive element equivalent to said liquid-receiving area, the container contents, when spread on said liquid-receiving area, placing said reagent in condition to effect an image development, portions of said reagent comprising a silver halide developer and being oxidizable and being included in said liquid, said frangible material being substantially impervious to oxygen, to said liquid and to vapors thereof.

EDWIN H. LAND.

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