United States Patent [19]

Honjo et al.

[11] **3,893,854**

[45] **July 8, 1975**

[54] **PHOTOGRAPHIC ARTICLES WITH GAPS FOR PROCESSING FLUIDS**

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[22] Filed: **Mar. 30, 1973**

[21] Appl. No.: **346,481**

[52] U.S. Cl..... **96/1.5**; 96/1 LY UX; 96/27 R UX; 96/48 R UX; 96/48 PP UX; 96/63 UX; 96/67; 96/76 C

[51] **Int. Cl.**..... **G03g 5/00**; G03g 7/00; G03C 5/04; G03c 5/24; G03c 1/58; G03c 5/22; G03c 5/34; G03c 5/24; G03c 1/76; G03c 1/48; G03c 3/00

[58] **Field of Search**..... 96/50 PL, 67, 63, 76 C, 96/1.5, 49, 48 R, 48 PD

[56] **References Cited**

UNITED STATES PATENTS

2,982,650	5/1961	Land	96/76 C
3,069,266	12/1962	Land	96/48 R
3,434,832	3/1969	Joseph et al.	96/1.5
3,650,737	3/1972	Maissel et al.	96/1.5
3,761,271	9/1973	Rogers	96/76 C

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[57] **ABSTRACT**

A photographic article particularly adapted for producing patterns or markings on high or otherwise relatively inaccessible structures, comprising a backing, a photosensitive layer, and a transparent film extending over the surface of said photosensitive layer and providing a small gap therebetween. The article is affixed to the surface of a structure at a selected location where marking is desired. The photosensitive layer is exposed through the transparent film by a remote laser marking beam, and then developer and other processing liquids are introduced into the gap between the transparent film and the photosensitive layer to develop the exposure pattern or markings produced by the laser beam.

8 Claims, 7 Drawing Figures

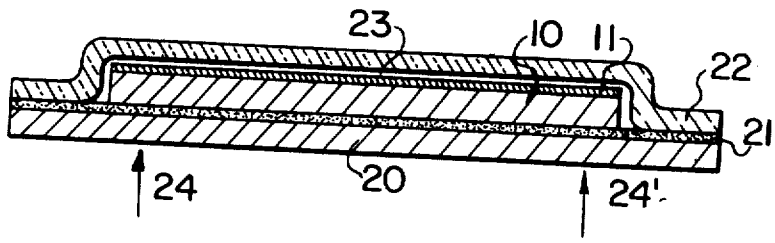


FIG. 1

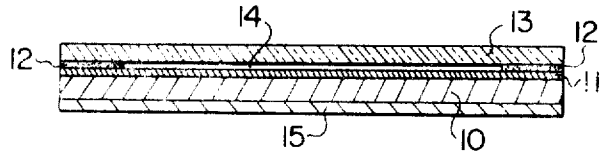


FIG. 2

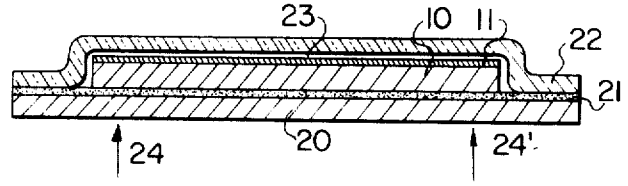


FIG. 3

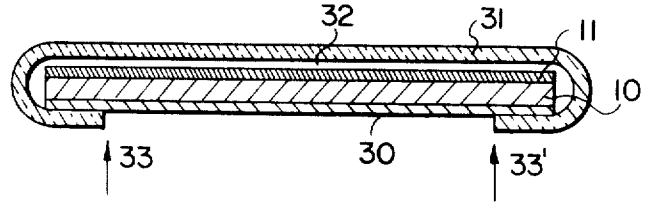


FIG. 4

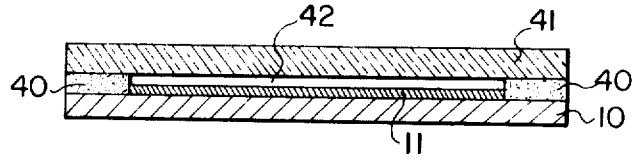


FIG. 5

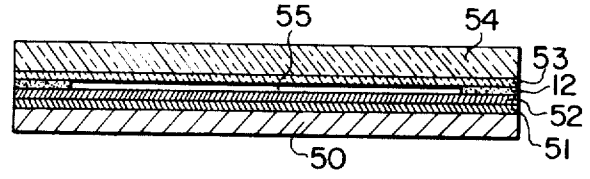


FIG. 6

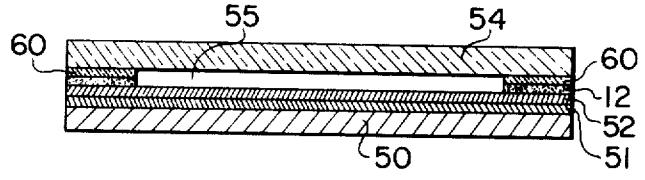
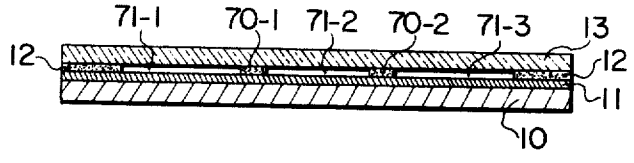


FIG. 7



PHOTOGRAPHIC ARTICLES WITH GAPS FOR PROCESSING FLUIDS

BACKGROUND AND SUMMARY OF THE INVENTION

The present invention relates to a photographic article for producing markings and the like on high or relatively inaccessible locations of structures. More particularly, the present invention is directed to such a photographic article which facilitates in situ photoprocessing.

In producing patterns or markings high upon vertical walls, or on relatively inaccessible locations of other structures, it is known to apply a photographic member to said wall, expose said member in a desired pattern or with appropriate markings using a remote laser beam, and then develop the pattern or markings. For such purposes one may use a silver halide emulsion or a photoconductive material as the photosensitive material. In either event, difficulties are experienced in in situ developing of the exposed photosensitive surface. It is difficult to apply developer or other processing liquids uniformly over the photosensitive surface. To achieve uniform development one must use a large quantity of developer to assure substantially complete contact between the developer and the exposed areas of the photosensitive surface. However, when using large quantities of developer, a substantial portion of the developer is lost and wasted, since it is difficult to retain the developer on a large vertical surface, or to collect it once applied over the exposed surface. This type of problem is of course magnified when working at high and inaccessible locations. The problem of handling excess processing liquids is further complicated when the processing takes place over an area which it is desired to protect from chemical contamination, such as for example over a pond or stream.

In accordance with the present invention, the foregoing problems are overcome by using a photographic member comprising a photosensitive layer and a transparent film overlay. The transparent film extends over the surface of the photosensitive layer but is separate therefrom to provide a gap or space for receiving developer and other processing liquids. The edge portions of the photosensitive member and the overlay film are bonded, so that processing liquids can be inserted therebetween and retained in the gap during the operation. This arrangement provides better and more uniform contact between the photosensitive layer and the processing liquid, using a minimum amount of processing material. Also, after processing, the liquid can be readily drained from the gap into a suitable container, avoiding pollution of the surrounding environment. Furthermore, the use of a transparent film extending over the surface of the photosensitve layer functions to protect the photosensitive material from ambient conditions, such as rain.

It is therefore one object of the present invention to provide for the photographic marking of remote and inaccessible locations, and to facilitate the in situ development of the photorecording surface.

Another object of the present invention is to provide a photographic article adapted to be affixed to a remote and relatively inaccessible location for optical exposure and in situ processing.

Still another object of the present invention is to provide such an article wherein the photosensitive material is protected from adverse environmental conditions.

Other objects and advantages of the present invention will become apparent from the detailed description of several specific embodiments presented hereinafter. It should be understood, however, that these embodiments are illustrative only, and various changes and modifications within the spirit and scope of the invention will become apparent to those skilled in the art.

BRIEF DESCRIPTION OF THE DRAWINGS

The detailed description of the invention is had in conjunction with the accompanying drawings, in which like reference characters refer to the same or correspondng parts, and wherein:

FIG. **1** is a cross sectional view of one embodiment of the present invention, wherein the photosensitive layer is carried by a substrate, and the transparent overlay film is bonded at its edges to the photosensitive layer by an adhesive;

FIG. **2** is a cross sectional view of another embodiment of the present invention, wherein the edge portions of a base for the photosensitive layer and the edge portions of the overlay film are bonded together, and the photosensitive layer is contained inside said edge portions;

FIG. **3** is a cross sectional view of a further embodiment of the present invention, wherein the edges of the transparent overlay film lap around the edges of the base;

FIG. **4** is a cross sectional view of still another embodiment of the present invention, wherein the edge portions of the substrate for the photosensitive layer extend beyond the edges of the photosensitive layer and are bonded to the edge portions of the overlay film;

FIG. **5** is a cross sectional view of yet another embodiment of the present invention, wherein a photoconductor is utilized as the photosensitive element and electrodes are provided for development;

FIG. **6** is a cross sectional view of still a further embodiment of the present invention, utilizing a photoconductor as the photosensitive element and a different arrangement of electrodes from the embodiment of FIG. **5**; and

FIG. **7** is a cross sectional view of another embodiment of the present invention wherein the overlay film is bonded to the photosensitive layer at a plurality of spaced intervals over its surface.

DETAILED DESCRIPTION

In the embodiment of the present invention shown in FIG. **1**, the photographic member comprises a photosensitive layer **11** disposed on a substrate **10**. The photosensitive layer can be, for example, a silver halide emulsion, and the substrate can be a plastic or other inert film, such as paper, cloth, metal foil, or the like. Substrate **10** may carry a pressure sensitive adhesive coating **15** on its back side. A transparent film **13** is disposed over the photosensitive layer **11** and is bonded along opposite side edges to said photosensitive layer with an adhesive **12**. As a result of this arrangement, a narrow gap or space **14** is provided between the photosensitive layer **11** and the transparent film **13**. The purpose of the gap **14** is to receive photographic developer and other processing liquids after exposure of the sensitive layer **11**. If the gap is initially close to zero, the

pressure produced against the transparent film **13** by the introduction of the processing liquids expands the gap slightly. If the gap is initially too wide, large amounts of processing liquids would be required, which, of course, is undesirable. Preferably, the size of the gap should be in the range of less than about 5 mm., preferably a fraction of a millimeter.

In operation, first the photosensitive member is applied to a surface, such as for example an iron plate or a wall, and may be positioned in a very high location, perhaps 100 feet or more above the ground. The photosensitive layer of the photographic member is exposed with desired markings or the like through the transparent film, by means of a laser beam of remote origin. Then a developer is introduced into the gap **14** between the transparent film and the exposed photosensitive layer at the top of the member. The developer seeps through the gap and is collected by a container at the bottom of the gap. The precise location of the markings may be transferred to the iron plate by punching the marked areas. The punching may be performed after stripping away the film **13,** if desired. Finally, the entire member is peeled off to expose the punched marks on the iron plate or wall. The substrate **10** is preferably as thin as possible, that is, only thick enough to maintain its shape, for example about 25 to 400 microns, and preferably about 25 to 150 microns. It may be transparent, opaque, colorless or colored. The overlay film **13** may be appropriately colored to shield the photosensitive layer from ambient light, but should be transparent to the laser beam so that the photosensitve surface can be properly exposed. The thickness of the film **13** should be sufficient to maintain its shape, such as from about 10 to 200 microns, and preferably about 10 to 100 microns. Examples of the materials from which the overlay film **13** can be made include various plastics such as cellulose triacetate, cellulose acetate butyrate, ethylcellulose nitrocellulose, polyethylene terephthalate, polyethylene, polypropylene, polyvinyl chloride, polyvinylidene chloride, polystyrene, polycarbonates, and various vinyl copolymers.

FIG. **2** shows another embodiment of the present invention wherein an additional supporting base **20** is utilized, which is larger than the photosensitive substrate **10.** The width of the base **20** is greater than that of the substrate **10,** and thus when the substrate **10** is applied over the base **20,** the edges of base **20** extend beyond those of the substrate **10.** The transparent overlay film **22** is applied with its edges bonded to the exposed edges of base **20** by adhesive **21.** The photosensitive member consisting of the photosensitive layer **11** carried by substrate **10** is thus sandwiched between the base **20** and the transparent overlay film **22.** A narrow gap **23** is present between the photosensitive layer **11** and the film **22.** This photographic member is mounted, exposed and developed in the same manner as described above for the embodiment of FIG. **1.** It is desirable for the supporting base layer to be as thin as possible while retaining the necessary body. Advantageously, it should have a thickness of about 10 to 100 microns, preferably about 10 to 50 microns. The film **22** is the same as the film **13** in FIG. **1.** Also, an adhesive coating may be provided on the back side of the base **20,** similar to coating **15** in FIG. **1,** and if desired such an adhesive coating may be utilized in all of the embodiments of the present invention. Adhesive **21** may be a heat softenable type, and can be heated at the points shown by the arrows **24** from the outside inwardly to bond the film **22** and the substrate **20** to each other along both side edges. In addition, the photosensitive substrate **10** and the base **20** are bonded, so that processing solutions such as a developer cannot enter in back of the layer **10.**

FIG. **3** shows another embodiment of the photosensitive member of the present invention, wherein the transparent overlay film **31** is the same as the transparent film **22** in FIG. **2.** In this instance, both side edges of the film **31** are folded over to the back of the photographic member and bonded to the substrate **30.** The transparent film **31** and the photosensitive layer **11** again define a gap **32** therebetween, which is adapted to receive developer and other photoprocessing solutions. To bond the edges of the overlay film **31** to the substrate **30,** heat and/or pressure is applied to the areas indicated by the arrows **33** and **33'**.

In the embodiment of the invention shown in FIG. **4,** photosensitive layer **11** does not cover the entire substrate **10,** but the substrate extends along both its side edges beyond the boundary of the photosensitive layer **11,** and adhesive layer **40** is provided along said extended side edge portions. The thickness of the adhesive layer is such that when the transparent overlay film **41** is bonded thereto, a narrow gap **42** is produced between the transparent film **41** and the photosensitive layer **11,** which is adapted to receive photoprocessing solution as in the preceding embodiments.

FIG. **5** shows an embodiment of the present invention used in electrical or electrolytic photographic processes. In this construction, a substrate **50** supports a conductive layer **51,** over which is provided a photoconductive layer **52.** A second conductive layer **53,** which is transparent and is coated on the transparent overlay film **54,** extends over the surface area of the photoconductive insulating layer. A gap **55** is provided between the overlay film and the photoconductive layer which is adapted to receive developer solution as above. The transparent conductive layer **53** which faces the gap **55** and the overlay film **54** are bonded to the photoconductive insulating layer **52** at its edges by adhesive **12.** The photographic member of FIG. **5** can be used for electrical image development as follows: After exposing the photoconductive insulating layer **52** to a laser beam marking as explained above, a developer liquid is introduced into the gap **55** and a suitable voltage of 50 to 2000 volts is applied across the electrodes **51** and **53.** The liquid developer which is utilized in this instance is a suspension of charged toner particles in a dielectric liquid vehicle. The conductive layers **51** and **53** are preferably vacuum plated conductive metal films which provide surfaces having good conductivity. Layer **53,** which should be transparent to the laser marking beam to permit exposure of the photoconductive insulating layer **52,** may be a vacuum plated metal layer with a thickness of about 100 to 500 A. The substrate **50** in FIG. **5** corresponds to layer **10** in FIG. **1,** and the transparent film **54** corresponds to overlay film **13.**

The gap **55** is preferably in the range of about 0.05 to 1 mm. when filed with developer. If the gap is significantly wider than this range, the contrast between the exposed and the unexposed portions is reduced; however, if the gap is too narrow, there is an insufficient amount of developer in contact with the photoconductive layer, and adequate image density will not be ob-

tained for all of the exposed areas of the photoconductive layer.

The process utilized in electrolytic photography is similar to that described above for electrical photography, except in electrolytic photography the developer is an aqueous electrolyte solution, the gap **55** is preferably in the range of about 0.1 to 5 mm., and the voltage applied between the electrodes **51** and **53** is preferably in the range of about 1 to 100 volts.

In an alternative method of the above-described electrical photographic process, a transparent insulating liquid, for example, kerosene, cyclohexene, Decalin, carbon tetrachloride, a Freon, or an Isopar is introduced into the gap **55** before exposure. After applying a voltage of about 200 to 5,000 volts for a period of about 2 to 20 seconds, the insulating liquid is removed from the lower end of the gap. The insulating liquid may be removed either before or after exposure. Then after exposure a liquid developer is introduced into the gap to develop the latent image on the photoconductive layer in the standard manner.

A so-called chargeless electrical photographic process can also be employed as a modification of the electrical photographic process. In such a method, an external voltage is not necessary and the conductive layer **53** in FIG. **5** can be eliminated. In this chargeless method, after exposing the uncharged photoconductive layer, a liquid developer of toner in a dielectric vehicle is introduced into the gap between the photoconductor and the overlay film to develop the image. The toner particles are either attracted to or repulsed by the photoconductive layer due to the small charges produced on the photoconductor by exposure.

Other methods in which liquid developers and photosensitive members are utilized include diazo photographic processes and a method using the photocatalytic action of a photoconductive layer. The former method consists of a combination of a photosensitive layer containing organic diazo compounds which readily decompose upon exposure to light, and a developer containing an alkali component which can be coupled with the nondecomposed diazo compounds. The latter method consists of a photosensitive layer comprising photoconductive zinc oxide or titanium oxide dispersed in a hydrophilic binder, and processed with a solution of a readily reducible metal salt, a reducing agent solution, and a stabilizing solution. The following literature references may be referred to for a more detailed explanation of this process and the treating baths:

E. Berman: Photo. Sci. and Eng. 13 (2) 50–53 (1969) "Reduction Reaction with Irradiated Photoconductors"

E. J. Delorenzo, et. al: Photo. Sci. and Eng. 13 (3) 95–102 (1969) "Quantum Efficiencies in Several Itek RS Processes"

FIG. **6** shows still a further embodiment of the present invention, which is a modification of the photographic member shown in FIG. **5.** In electrolytic photography, it is not necessary for the conductive layer **53** to cover the entire surface area of gap **55,** because of the low resistance of the electrolytic developer. Accordingly, it is sufficient to contact the developer at either one or both sides of the gap, as illustrated by the use of small conductive strips **60** disposed along both side edges of the gap **55.** One may also position a fine metal wire across the gap **55** between the conductive strips **60.** In this case it would be preferable for the wire to be covered with an insulating material through which the electrolytic liquid can penetrate, such as, for example, a silk-coated wire.

In all of the embodiments described above, the gap between the photosensitive layer and the transparent overlay film is difficult to keep uniform with a wide photographic member, because there is the tendency for the center portion of the transparent film to bulge outwardly on introduction of a processing liquid into the gap. To alleviate this problem, one may provide adhesive strips or spots at various locations in the gap between the edges, as shown in the embodiment of FIG. **7.** The embodiment of FIG. **7** shows the use of narrow strips of adhesive **70-1** and **70-2** disposed in the gap for affixing the overlay film to the photosensitive layer across the width of the photographic member. Preferably, the width of these adhesive strips is about 0.5 to 2 mm. If the width of the adhesive strips is too small, the adhesive effect is reduced, and if the width of the adhesive strips is too large, the area which is contacted by the developer is reduced. The adhesive strips **70-1** and **70-2** produce sectional gaps **71-1, 71-2** and **71-3,** which preferably have a width of from a few millimeters to 100 millimeters each. It is desirable to provide breaks in the adhesive strips so that the sectional gaps interconnect with each other, to insure that all of the exposed areas are contacted with the developer. In practice, it is found desirable to make the adhesive strips **70-1** and **70-2** as short interrupted lengths rather than as continuous long lengths.

FIGS. **1–7** show cross-sectional embodiments of the photographic member of the present invention. It is contemplated that in practice the member will be formed as a laminate of indefinite length and wound up in the form of a long roll. As required, suitable lengths will be unwound and cut off from the supply roll. As shown in FIGS. **1–7,** the photographic member is bonded along its side edges to prevent processing liquids from flowing out the sides. However, if a small amount of liquid does leak out in this manner during processing, the overall operation will not be adversely affected. In producing the photographic member of the present invention, it is desirable to use adhesives which are not adversely affected by the processing solutions. Since many of the aqueous processing solutions are either alkaline or acidic in nature, the adhesives utilized should be chemically stable to such solutions. In any event, since the photographic members are generally used only once, the stability of the adhesive is not a significant requirement. In electrical photography, an organic non-polar solvent is used as the liquid vehicle for the toner, so an adhesive composition should be selected which is not affected by such liquids. Polyvinyl acetate, polyalkyl acrylates and the like are illustrative compounds which are suitable adhesives for the present purposes.

The following specific examples further illustrate the practice of the present invention:

EXAMPLE I

A photosensitive member as shown in FIG. **1** is prepared as follows: A dispersion comprising 10 parts by weight of gelatin and 20 parts by weight of barium sulfate is applied to a supporting film of cellulose triacetate having a thickness of 75 microns. The dispersion of barium sulfate in the gelatin solution forms a layer

on the triacetate film having a dry thickness of 8 microns. On top of the barium sulfate layer a coating of a gelatin-silver halide emulsion is applied consisting of silver chlorobromide having a chloride content of 30 percent by weight and a bromide content of 70 percent by weight. The thickness of the dry film is 5 microns and the amount of silver contained in this film is 65 mg. per hundred cm^2.

The above composite is formed into a long web having a width of 61 mm. Along both longitudinal edges of the photosensitive layer, an adhesive layer having a width of 10 mm. and a thickness of 50 microns is applied. After evaporating the solvent from the adhesive layer, a long polyethylene film having a width of 62 mm. and a thickness of 25 microns is bonded at its edges to the photosensitive layer by the adhesive layers. Finally, an additional adhesive layer, such as, for example, polyvinyl acetate plasticized with dibutyl phthalate and having a thickness of 50 microns, is formed on the back of the cellulose triacetate film to produce a photographic member having the structure shown in FIG. **1.**

A suitable length is cut from the foregoing web, and it is affixed to a vertical steel wall at a height of about 10 meters. The photosensitive layer is then exposed by directing an argon ion laser beam having a wave length of 4,880 A, an output of 50 mW and a beam diameter of about 0.5 mm. onto the surface of the photosensitive layer. The laser beam is moved horizontally at a rate of 30 cm. per second. A soft polyvinyl chloride tube having an inner diameter of 10 mm. and an outer diameter of 12 mm. is then inserted at the top of the photographic member between the photosensitive layer and the transparent polyethylene film, and a conventional developer is introduced into the gap defined by the polyethylene film and the photosensitive layer through said tube. When the developer is initially introduced into the gap, the lower end of the photosensitive member is pinched shut. After about 1½ minutes the developer is removed from the gap by draining it from the lower portion of said gap into a suitable container. Then a conventional fixing solution is introduced into the gap to fix the developed image. After a residence time of about 3 minutes, the fixing solution is drained from the gap into another suitable container. Finally, water is introduced into the gap to wash the developed image of clear black marks against a white background.

EXAMPLE II

A photosensitive member is prepared according to the embodiment of FIG. **5** as follows: One hundred parts by weight of photoconductive zinc oxide, e.g. Sazex number 2000 of Sakai Kagaku Kogyo, is added to a dye solution containing 0.04 parts by weight Eosin (C.I. 45380) and 0.06 parts by weight 3-carboxymethyl 5-[(3-ethoxycarbonylmethyl-2-(3H)tiazolinilidene) ethylidene]-rhodenin. This mixture is then dissolved in 400 parts by weight of methanol and dispersed supersonically. The product is then centrifuged again and a zinc oxide paste is recovered containing the dye materials absorbed thereon. To 100 parts by weight of zinc oxide obtained in the above manner is added 125 parts by weight of a styrenated alkyd resin, e.g., Styresol 4400, a trade name of Nihon Reichold K.K., and 7.5 parts by weight of a polyisocyanate compound, e.g., Desmodul L., a trade name of Bayer, as a hardener. Then, n-butylacetate is added to adjust the volume content of the non-volatile mixture to 25%. The product is put in a magnetic ball mill and kneaded for six hours to produce a colored dispersion which is applied over an aluminum coated polyethylene terephthalate substrate. The polyethylene terephthalate layer has a thickness of 50 microns, the aluminum layer which is applied by vacuum evaporation has a thickness of 0.1 micron, and the colored zinc oxide dispersion has a dry thickness of 10 microns. After drying, the product is permitted to harden at 40° C. for 16 hours.

This photosensitive member is then cut into a 100 mm. width and formed into a long roll. Adhesive strips having a width of 10 mm. are applied to the photosensitive layer along both side edges of the role. A layer is prepared by coating a film of polyethylene terephthalate having a width of 102 mm. and a thickness of 25 microns by vacuum evaporation with a layer of aluminum having a thickness of 200 A. This layer is applied over the photosensitive layer with the aluminum surface facing the photosensitive layer, and is bonded to the adhesive strips. Thus the photosensitive member shown in FIG. **5** is obtained.

Kerosene is then poured into the gap between the photoconductive layer and the transparent overlay film of polyethylene terephthalate, and a voltage of 500 volts is applied across the two conductive layers for 15 seconds, with the conductive layer disposed on the transparent film acting as the negative electrode. Then the photosensitive layer is exposed to an argon ion laser beam, the kerosene is withdrawn, and a liquid developer of carbon black suspended in kerosene is poured into the gap and flows down over the surface of the photoconducting layer. This development produces clear black lines against a white background.

EXAMPLE III

Example III is similar to Example II, with the exception that instead of applying a conductive aluminum layer to the transparent overlay film, aluminum strips having a width of 15 mm. are vacuum plated to a thickness of 0.1 micron along both sides of the photosensitive member, as shown in FIG. **6.** The transparent overlay film is bonded to these conductive strips. The photosensitive layer was formed from the following composition: 100 parts by weight of photoconductive zinc oxide, 25 parts by weight of Pliolite S-5D (styrene-butadiene copolymer of Good Year Tire and Rubber), 0.02 parts by weight of Eosin (C.I. 45380) and 150 parts by weight of toluene. This solution is applied to the substrate to obtain a dry thickness of 10 microns. The photoconductive member thus produced is exposed to an argon ion laser beam through the overlay film, similarly as in the preceding examples. Then a developer comprising a 2% aqueous solution of triphenyl tetrasodium chloride is introduced into the gap between the photoconductive layer and the transparent film and a voltage of 6 volts is applied between both electrodes for 10 seconds. The conductive layer on the back of the photoconductive layer is made the negative electrode. Clear reddish-brown lines are obtained against a white background. In electrolytic photography, it is necessary to obtain a dark conditioning before the layer is exposed. For this purpose, it is suggested that warm water having a temperature of about 40° C. be passed over the photosensitive surface in a dark area before exposure.

The invention being thus described, it will be obvious to one skilled in the art that the same may be varied in

many ways. Such variations are not to be regarded as departures from the spirit and scope of the invention, and all modifications as are embraced by the appended claims are intended to be included within the purview of the present invention.

What is claimed is:

1. A photographic member comprising a photosensitive element having a supporting layer, a substrate contiguous with said supporting layer, a photosensitive layer on the free surface of said substrate and a transparent film associated with said photosensitive layer whereby a gap is formed therebetween,

the side edges of said supporting layer extending beyond the side edges of the photosensitive layer and the substrate, and the transparent film being bonded to the surface of said supporting layer which extends beyond the side edges of the photosensitive layer and the substrate.

2. The photographic member as set forth in claim 1, wherein the transparent film and the photosensitive layer are bonded at selected areas in the gap between said film and said layer.

3. A photographic member comprising a photosensitive element having a substrate and a photosensitive layer on said substrate, and a transparent film associated with said photosensitive layer thus defining a gap therebetween, said transparent film lapping around the side edges of said element and being bonded to said element at these lapped areas, whereby processing liquids can be introduced into said gap and retained in contact with the photsensitive layer.

4. The photographic member as set forth in claim 3, wherein the transparent film and the photosensitive layer are bonded at selected areas in the gap between said film and said layer.

5. A photographic member comprising a photosensitive element having a substrate and a photosensitive layer on said substrate, and a transparent film associated with said photosensitive layer thus defining a gap therebetween,

the side portions of said substrate extending beyond the edges of said photosensitive layer and said extended portions of said substrate being adhesively bonded to the transparent film.

6. The photographic member as set forth in claim 5, wherein the transparent film and the photosensitive layer are bonded at selected areas in the gap between said film and said layer.

7. A photographic member comprising a photosensitive element having a supporting layer, a conductive substrate contiguous with said supporting layer, a photoconductive layer on the free surface of said substrate and a transparent film associated with said photoconductive layer, whereby a gap is formed therebetween,

the surface of the transparent film facing the photoconductive layer being further overcoated with a substantially transparent conductive coating.

8. The photographic member as set forth in claim 7, wherein the transparent film and the photosensitive layer are bonded at selected areas in the gap between said film and said layer.

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