

Aug. 27, 1974

KOICHI KINOSHITA ET AL

3,832,169

METHOD OF ELECTROPHOTOGRAPHY WITH A PHOTOCONDUCTIVE LAYER

MANIFESTING PERSISTENT INTERNAL POLARIZATION

Original Filed Feb. 12, 1969

2 Sheets-Sheet 1

FIG. 1

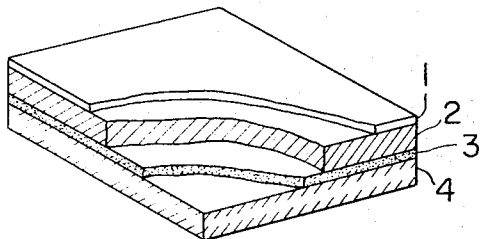


FIG. 3

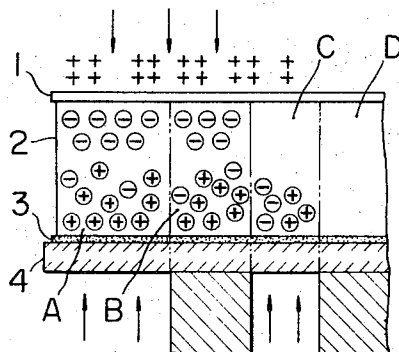


FIG. 2

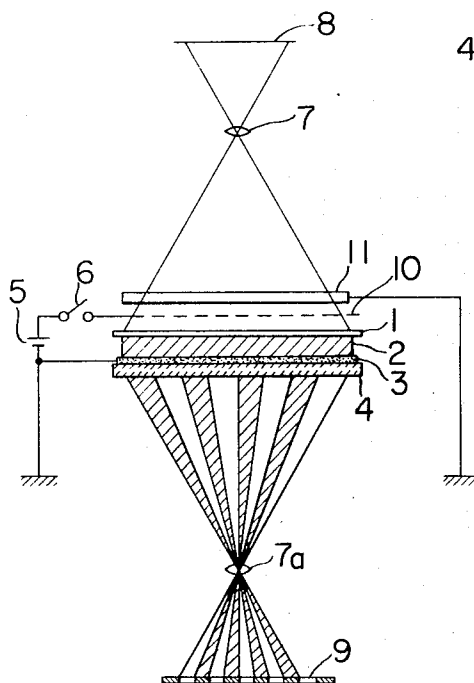


FIG. 8

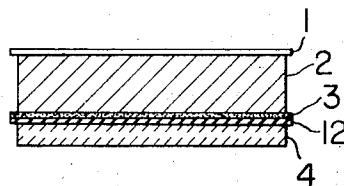
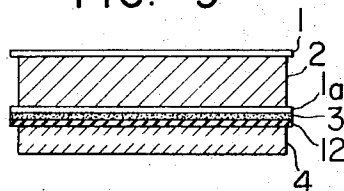


FIG. 9



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FIG. 4

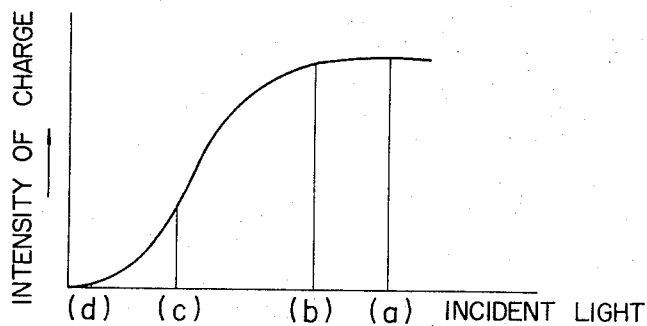


FIG. 5

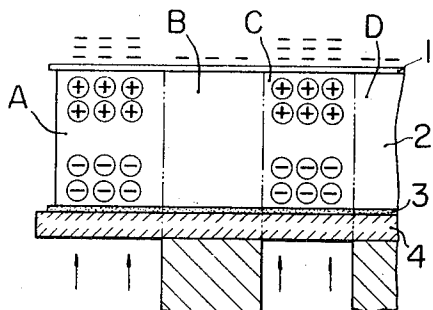


FIG. 6

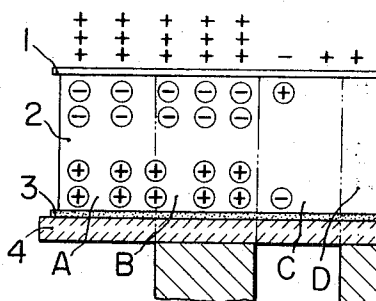
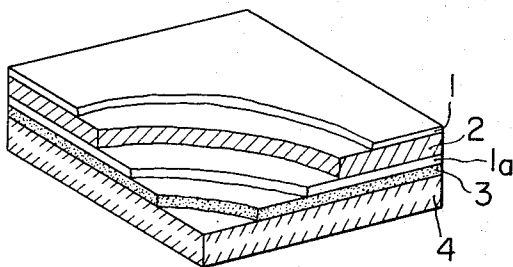


FIG. 7



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METHOD OF ELECTROPHOTOGRAPHY WITH A PHOTOCONDUCTIVE LAYER MANIFESTING PERSISTENT INTERNAL POLARIZATION

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Continuation of abandoned application Ser. No. 798,647, Feb. 12, 1969. This application Sept. 28, 1971, Ser. No. 184,638

Claims priority, application Japan, Feb. 14, 1968, 43/9,254

Int. Cl. G03g 5/02

U.S. Cl. 96—1 R

8 Claims

ABSTRACT OF THE DISCLOSURE

A method of electrophotography comprising the step of applying a first field across a photosensitive element including a transparent highly insulative layer and a photoconductive layer manifesting persistent internal polarization integrally bonded to the highly insulative layer to deposit an electric charge of a first polarity opposite to that of the majority carriers of the photoconductive layer on the surface of the highly insulative layer. An image of a screen is projected upon the photoconductive layer from the side of the photosensitive element opposite the highly insulative layer concurrently with the application of the first field. The screen may be integral with or separate from the photosensitive element. The photoconductive layer has a thickness such that light portions of the screen image do not cause substantial excitation of the photoconductive layer on the side adjacent the insulative layer. A second field is applied across the photosensitive element to deposit an electric charge of polarity opposite to the first polarity on the surface of the highly insulative layer and a light image is projected upon the photoconductive layer through the highly insulative layer concurrently with the application of the second field whereby to form a latent image corresponding to the light image on the surface of the highly insulative layer.

This is a continuation of application Ser. No. 798,647, filed Feb. 12, 1969 now abandoned.

BACKGROUND OF THE INVENTION

This invention relates to a method of electrophotography, more particularly to a method of electrophotography wherein images of continuous tone can be produced with high fidelities by using a photosensitive element including a highly insulative layer, a photoconductive layer and a layer of screen structure which is integrally built in the photosensitive element or spaced apart from the photosensitive element.

There has been proposed a method of electrophotography comprising the steps of applying a first field across a photosensitive element including a transparent highly insulative layer, a photoconductive layer and a transparent electrode layer which are bonded together into an integral structure to deposit a charge of a first polarity on the surface of the highly insulative layer; projecting uniform light on the photoconductive layer through the transparent electrode layer concurrently with the application of the first field; applying a second field across the photosensitive element to deposit a charge of a polarity opposite to the first polarity on the surface of the highly insulative layer and projecting a light image on the photosensitive element through the highly insulative layer concurrently with the application of the second field whereby to form an electrostatic latent image corresponding to the light image on the surface of the highly insulative layer. The latent image is

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characterized by not being erased by later irradiation of light rays, so that it can be preserved and developed under ambient light to produce a picture of high reproducibility and high contrast. Further, this process enables use of photoconductive materials of low dark resistance and high photosensitivity.

SUMMARY OF THE INVENTION

It is an object of this invention to further improve the above described method of electrophotography to obtain pictures of continuous tone and high reproducibility.

Another object of this invention is to provide a novel photosensitive element including a layer of screen structure to manifest screen effect.

Another object of this invention is to provide an improved method of electrophotography free from so-called edge effect.

According to one aspect of this invention where is provided a photosensitive element for use in electrophotography comprising a transparent highly insulative layer, a photosensitive layer and a layer of screen structure which are lamination in the order mentioned and are bonded together to form an integral structure. Advantageously, the photosensitive element is provided with a transparent electrode layer bonded to the layer of screen structure. In some cases, the screen structure may be constructed so as to act also as an optical filter.

To carry out the novel method of electrophotography, in addition to this type of photosensitive element, a well known photosensitive element merely comprising a transparent highly insulative layer and a photosensitive layer integrally bonded to the highly insulative layer can also be used. Again, a transparent electrode layer may be used. In these both types of photosensitive elements, two transparent highly insulative layers may be used on the opposite sides of the photosensitive layer to improve the noise-to-signal ratio.

According to one embodiment of this invention an electrostatic latent image is formed on the surface of the transparent highly insulative layer by a method comprising the steps of projecting a light image upon the photosensitive element of the second mentioned type through its highly insulative layer, applying an electric field across the photosensitive element concurrently with the projection of the light image and projecting an image of a screen upon the photosensitive element from the side opposite the highly insulative layer concurrently with the projection of the light image and application of the electric field.

According to a modified embodiment of this invention an electrostatic latent image is formed by a method comprising the steps of applying a first field across a photosensitive element of the second mentioned type to deposit an electric charge of a first polarity on the surface of the highly insulative layer, projecting upon the photosensitive element an image of a screen from the side thereof opposite the highly insulative layer concurrently with the application of the first field, applying a second field across the element to deposit an electric charge of the polarity opposite to the first polarity on the surface of the highly insulative layer and projecting a light image upon the photosensitive element through the highly insulative layer concurrently with the application of the second field.

According to a further modification of this invention an electrostatic latent image is formed by a method comprising the steps of applying electric field across a photosensitive element of the first mentioned type, projecting a light image upon the element through its transparent highly insulative layer concurrently with the application of the field, and projecting uniform light upon the photosensitive element through the layer of screen structure concurrently with application of the electric field and with the projection of uniform light.

According to a still further modification of this invention an electrostatic latent image is formed by a method comprising the steps of applying a first electric field across a photosensitive element of the first mentioned type to deposit a charge of a first polarity on the surface of the highly insulative layer, projecting uniform light upon the element from the side thereof opposite the highly insulative layer concurrently with the application of the field, applying a second field across the photosensitive element to deposit a charge of a polarity opposite said first polarity on the surface of the highly insulative layer and projecting a light image on the element through the highly insulative layer concurrently with the application of the second field.

The latent image formed by each one of the above described methods is developed by a conventional developing technique but under ambient light because the latent image is formed on the highly insulative layer and is not erased or decayed by later light irradiation. Moreover, as a screening effect is used, undesirable edge effect is eliminated to provide clear visible images of high contrast and high reproducibility.

The electric field can be established by any suitable means well known in the art such as a removable electrode positioned on the surface of the photosensitive element or a corona discharge electrode.

BRIEF DESCRIPTION OF THE DRAWING

The invention can be more fully understood from the following detailed description when taken in conjunction with the accompanying drawing in which:

FIG. 1 shows a perspective view, partly broken away, of a photosensitive element utilized in carrying out the method of this invention;

FIG. 2 shows a diagrammatic representation of one example of the novel method of electrophotography utilizing the photosensitive element shown in FIG. 1;

FIG. 3 is a diagram to explain the mechanism of forming an electrostatic latent image by the method shown in FIG. 2;

FIG. 4 is a graph to show the relationship between the quantity of incident light and the intensity of the surface charge;

FIGS. 5 and 6 are diagrams to explain the mechanism of forming electrostatic latent images in accordance with modified embodiments of this invention;

FIG. 7 is a perspective view, partly broken away, of a modified photosensitive element; and

FIGS. 8 and 9 show sections of further modified photosensitive elements.

Referring now to the accompanying drawing, FIG. 1 shows a well known photosensitive element comprising a transparent highly insulative layer 1, a photoconductive layer 2, a transparent electrode layer 3 and a transparent substrate 4 which are laminated in the order mentioned and bonded together into an integral structure.

FIG. 2 shows a diagram to explain the principle of the novel method of electrophotography utilizing the photosensitive element shown in FIG. 1 wherein an electric field of a predetermined polarity is applied across electrode layer 3 and a corona discharge electrode 10 in the form of metal wires or a metal wire melting having a grounded transparent counter electrode 11 from a source of high voltage direct current 5 and a switch 6, a light image of an object 8 is projected upon the photosensitive element by means of a lens 7 through transparent counter electrode 7 and highly insulative layer 1 and an image of a screen 9 which may be prepared by printing or photoetching and having a construction similar to that utilized in the screen printing machine is projected through a lens 7a.

Although it is preferable to use the illustrated photosensitive element because of its inexpensive and simple construction and capability of applying uniform field, it should be understood that any one of many other types of photosensitive element can be used.

Any transparent highly insulative material can be used to form transparent highly insulative layer 1 so long as it is transparent to light rays and can preserve electric charge or electrostatic latent image formed on the surface thereof. Photosensitive layer 2 may be made of any photoconductive material such as Se, CdS, SeAs, SeTe, ZnO, CdSe, etc. Transparent electrode layer 3 may comprise any transparent conductive film of SnO₂, CuI and the like, or a semi-transparent thin layer of vapour deposited metal such as aluminum for example. While it is not always necessary to use substrate 4 which is utilized for the purpose of mechanical reinforcement, such substrate may be made of any material transparent to light such as glass or synthetic resin.

Although FIG. 2 shows diagrammatically one example of the method of this invention, it is essential to simultaneously effect projection of the light image of the object through the highly insulative layer 1, projection of the light image of the screen 9 and the application of DC field across the photosensitive element. For this reason, the counter electrode 10 utilized for the purpose of stabilizing the corona discharge should be made of an electroconductive material transparent to light rays such as Nesa glass (registered trademark), for example.

The phenomena involved in the process step are simple and can be diagrammatically illustrated in FIG. 3. The left hand region A of FIG. 3 corresponds to bright portions of the light image which is projected upon the photosensitive element through transparent highly insulative layer 1 and to bright portions of the screen projected through transparent substrate 4 and transparent electrode layer 3, light rays from such bright portions being indicated by arrows.

Since this region is irradiated with relatively intense light from both sides, migration of electric charges in the photoconductive layer is most significant, with the result that a large charge is deposited upon the surface of the highly insulative layer.

In region B which corresponds to bright portions of the light image and to dark portions of the screen as there is no light stimulation from under the charge distribution inside the photoconductive layer becomes somewhat different. However, owing to a phenomenon common to many methods of electrophotography of the type referred to above, the response is essentially the same for incident lights of the quantity exceeding a predetermined value. For this reason, the density of the charge deposited on the surface of the highly insulative layer is substantially the same for both regions A and B. FIG. 4 shows a typical curve showing the relationship between the quantity of incident light and the intensity of the charge deposited on the surface of the highly insulative layer or that of an electrostatic latent image formed thereon.

As can be noted from FIG. 4, as a point indicated by (a) where the intensity of the incident light is high, the density of the electric charge δ on the surface of the photosensitive element becomes saturated or remains at a substantially constant value in spite of a substantial change in the quantity of the incident light so that it is easy to construct the element such that portions corresponding to dark portions of the light image of the screen projected from under and portions corresponding to bright portions of the same light image will have the same value of δ . When the quantity of the incident light projected upon portions corresponding to bright portions of the light image of the object through the highly insulative layer is selected to be a value represented by point (a) the difference between regions A and B corresponding to bright and dark portions of the screen becomes negligible. In region C, FIG. 3, corresponding to dark portions of the light image and to bright portions of the screen, as the light stimulation is provided through transparent electrode layer 3 by the image of the screen, photosensitive layer 2 is excited partially to give a surface charge as represented by point (c) in FIG. 4 but in region D corresponding to dark portions

of both light image and screen 9 as there is no light stimulation, a phenomenon as shown by (d) in FIG. 4 occurs. Thus, the effect of the screen appears only at portions corresponding to the dark portions of the light image but does not appear at portions corresponding to the bright portions of the light image. For this reason, dark portions of the light image which are ordinarily difficult to uniformly reproduce at high fidelities owing to the so-called edge effect are suitably screened so that when developed with a charged toner the latent image gives a clear visible image without the deleterious edge effect.

Such effect of screening is not only effective to reproduce at high fidelities dark portions of the light image having uniform intensity and large area but is very effective to reproduce a light image of medium intensity. Where a light image having an intensity as shown by point (b) in FIG. 4 is projected through the transparent highly insulative layer there is a large difference between portions respectively corresponding to bright and dark portions of the screen projected through the transparent electrode layer. This combines with the characteristics of the conventional method of electrophotography having low reproducibility of medium tones to provide excellent reproducibility of visible images. Although various efforts have been made in the past to eliminate the edge effect so as to realize reproducibility of continuous tones, until today no satisfactory solution has been found.

While the above described method comprises the most simple process steps of forming the latent image in accordance with this invention, in the electrophotography utilizing a photosensitive element including a transparent highly insulative surface layer there are many other methods of forming electrostatic latent images by proper control of charge carrier distribution in the photoconductive layer. The principle of this invention is also applicable to such different methods.

As above described, there have been developed some methods wherein electric fields of opposite polarities are applied successively.

One of them comprises the steps of applying a first field across the photosensitive element to deposit a charge of a first polarity on the surface of the highly insulative layer, projecting uniform light on the photoconductive layer through the transparent layer concurrently with the application of the first field, applying a second field across the photosensitive element to deposit a charge of a polarity opposite to the first polarity on the surface of the highly insulative layer and projecting a light image on the photosensitive element through the highly insulative layer concurrently with the application of the second field whereby to form an intense electrostatic latent image corresponding to the light image on the surface of the highly insulative layer.

Application of the same process steps to the method of this invention results in different effects. More particularly, when the image of a screen is projected through the transparent electrode layer during the first step in which the first field is applied, an effect just opposite to that described hereinabove occurs. FIG. 5 shows the charge distribution created on the surface of the highly insulative layer and in the photoconductive layer under this condition while FIG. 6 the charge distribution during the second step wherein the light image is projected concurrently with the application of the second field.

At portions indicated with light through the transparent electrode layer of the photosensitive element during the first step, a plurality of free charge carriers are created in photoconductive layer 2. If it is assumed that the polarity of the majority carriers is positive for example, the polarity of the applied field is selected such that the polarity of the electrostatic charge deposited on the surface of the highly insulative layer will be negative, or opposite to the polarity of the majority carriers, of pairs of free charge carriers created the majority carriers will

migrate over large distances due to their high mobility and will be blocked by the highly insulative layer 1 so that they are trapped in portions of the photoconductive layer near the highly insulative layer. Whereas at portions not irradiated with light such a large polarization charge will not be formed. The difference between these charge distributions causes variation in the density of the electrostatic charge on the surface of the highly insulative layer. During the second step when the light image is projected through the transparent highly insulative layer concurrently with the application of the second field of the opposite polarity, at portions corresponding to bright portions of the light image the trapped charge created by the first step is quickly released while at the same time pairs of free charge carriers are created of which majority carriers migrate over large distances so as to establish a charge distribution as shown by region A in FIG. 6. Also at portions not irradiated with light during the first step but irradiated during the second step saturation of the surface charge by the reason as has been discussed in connection with FIG. 4 a condition similar to that of region A occurs, the former being shown by region B in FIG. 6. At portions irradiated during the first step but not during the second step, the trapped charge created in the first step is difficult to be released since there is no light stimulation in the second step but the trapped charge is merely partially released by thermal stimulation. This persistence of the trapped charge limits deposition of a charge of new polarity on the surface of these portions thus producing a charge distribution as shown by region C in FIG. 6. Variation of the charge is the minimum at portions not irradiated with light during both the first and second steps thus establishing a charge distribution as shown by region D in FIG. 6. Thus, the intensity of the electrostatic latent image formed on the surface of the photosensitive element corresponding to the projected light image is uniform at portions corresponding to bright portions of the light image but screened at portions corresponding to dark portions of the light image. Accordingly, when developed in the conventional manner, a uniform visible image without the edge effect can be obtained but with high fidelity.

Of course, the screening effect provided by this method is different from that of the first embodiment in that the contrasts of the screened images are opposite. Generally speaking, the first method in which the image of the screen is projected can form visible images of higher intensity with higher screening effect.

In order to simplify the description, in the foregoing description nothing has been said about transfer of charge carriers between the photoconductive layer and the transparent electrode layer. Actually, however, transfer of charge occurs between these layers. However, it is not necessary to make substantial change in the description. Above descriptions can also be applied to a modified photosensitive element in which a second transparent highly insulative layer 1a is added between and integrally bonded to photoconductive layer 2 and transparent electrode layer 3, as shown in FIG. 7.

It is to be understood that said two types of the methods of electrophotography can be modified in various ways to make them more practical or to provide different functions and results.

In the foregoing description the screen was projected as an optical image because of an excellent resolution of the projected image of the screen.

Although better results can be obtained where the image of the screen has a higher resolution and fineness than the projected light image, to require for the image on the screen to have such unique characteristics necessitate a high degree of skill which is not always preferable.

We have also invented a novel photosensitive element including a screen structure therein and can readily apply five screening effects at higher resolution to the latent image and a method of electrophotographing utilizing the same.

FIGS. 8 and 9 illustrates two types of such modified photosensitive elements in which reference numeral 12 designates a screen. In each of FIGS. 8 and 9 which correspond to FIGS. 1 and 7, respectively, the screen 12 is shown as interposed between transparent electrode layer 3 and transparent substrate 4.

When either one of above described methods of this invention is applied to the photosensitive elements shown in FIGS. 8 and 9, latent images are formed on the surface of the highly insulative layer 1 by the same mechanism as above described except that there is transfer of charge carriers between transparent layer 3 and photoconductive layer 2 or not. In either case the light projected through the transparent electrode layer is not required to be an image of a screen but may be uniform light.

As has been pointed out although it is very difficult to correctly project an image of a fine screen of a density of 10 lines per one mm. with the modified photosensitive element it is easy to form screens of extremely high resolution.

It is believed that this is caused by the combined effects of various factors that the photosensitive photoconductive layer and the screen structure are in direct contact or spaced apart only several microns, that there is no degradation of the picture quality which occurs when the image of the screen is projected through an optical system, that the field is applied in a direction perpendicular to the surface of the photosensitive element and that portions excited by light are limited to portions near the surface upon which light is projected so that charge carriers migrate through the photoconduction layer only in the direction of the thickness. For this reason, even a screen of the density of 10 lines per mm. can be readily resolved by a practical photosensitive element including a photosensitive layer of a thickness of less than 100 microns. Due to such improvement of the resolution and utilization of very simple method of illumination it is advantageous to use photosensitive elements shown in FIGS. 8 and 9.

In the following, some examples of the novel photosensitive elements and methods of electrophotography utilizing the same are given.

Example 1

A photographic emulsion was applied on the surface of a glass substrate and an image of a mother screen having a density of 150 lines per 2.54 cm. (one inch) was projected and then the coated substrate was developed to form a screen. Then a thin layer of Au was vacuum deposited on the surface of the screen to a thickness exhibiting more than 90% of transmissibility for visible light rays, whereby to provide a transparent electrode layer. A Se-Te alloy containing 15% of Te was vapour deposited on the electrode layer to a thickness of 35 microns while the substrate was heated to 60° C. Then a suitable solution of polycarbonate was applied on the surface of the Se-Te layer to a dry thickness of 10 microns, thus forming a transparent highly insulative layer.

Uniform light of the brightness of 3 luxes was projected upon the photosensitive element thus obtained from bottom or through the transparent electrode layer. Concurrently therewith a light image including continuous tones having a brightness of 3 luxes at bright portions was projected upon the element through the polycarbonate layer. At the same time the photosensitive element was subjected to corona discharge for 0.2 second established between the transparent electrode layer and a corona discharge electrode maintained at +6000 volts, as shown in FIG. 2 whereby a latent image corresponding to the light image was formed on the polycarbonate or highly insulative layer. The photosensitive element was then taken out under ambient light and subjected to a cascade development process steps using a powdery mixture of a positively charged toner and a negatively charged carrier. In the resulted visible image, portions

corresponding to dark portions of the light image had contrasts corresponding to the tone of the object (manuscript) with negligible edge effect while any toner was not attached to portions corresponding to bright portions of the light image. The powder image can be transfer printed onto suitable paper or other medium. After cleaning off the remaining toner and erasing the residual charge on the surface, the photosensitive element is ready for next cycle.

Example 2

Concurrently with the projection of uniform light of the brightness of 3 luxes upon a photosensitive element identical to that of example 1 through the transparent Au electrode layer a negative charge was deposited for 0.2 second on the surface of the transparent highly insulated layer by means of corona discharge. After this first step a second step was applied for 0.2 second wherein concurrently with the projection of a light image containing continuous tones having a brightness of 3 luxes at its bright portions upon the photosensitive element through the highly insulative layer a positive charge was deposited on the surface thereof by means of corona discharge whereby to form a latent image corresponding to the light image on the surface of the highly insulative layer.

The latent image was developed under ambient light in the same manner as in example 1 to obtain a visible image having higher intensity and more improved reproducibility of continuous tones than that of example 1. Further, no edge effect was noted even at continuous black portions of a large area.

Above described photosensitive elements can be modified to meet various practical requirements. Thus, for example, the screen structure embedded in the photosensitive element was made of a photographic emulsion. However, usually, as silver salt emulsion is used all light rays in the visible range are intercepted. If, however, a screen structure having optical filter function were provided, the effect of the filter structure could be controlled as desired. Such a screen structure having a function of a filter can be readily prepared by utilizing coloured photographic emulsion in the example 1 having a property of selectively absorbing light rays of predetermined wavelength such as green or red light. By arranging the absorption end of the filter to reside in the photosensitive range of the photosensitive layer, the effect of the screen can be eliminated when light rays projected from the side of the screen structure are selected to be in the range of transmissive wavelength. On the other hand when the light rays are selected to be in the range of absorption of the filter screening effect can be provided. Such control of the screen effect enables to avoid the so-called Moire effect when photographing a printed matter print printed by the screen printing technique. Further the intensity of the screen effect can be controlled as desired by selecting the wavelength of the light projected from the side of the screen to have components of the wavelength in both transmission range and absorption range of the screen and by suitably varying the relative intensity of said components.

Thus, in accordance with this invention use is made of a photosensitive element comprising a highly insulative layer, a photoconductive layer, a screen structure and a transparent electrode layer or comprising a highly insulative layer, a photoconductive layer and transparent electrode layer. In the latter case an image of a screen independent of the photosensitive element is projected upon the photosensitive element through the transparent electrode layer. To further promote the screening effect above described methods may be combined.

Although in the above embodiments a transparent electrode layer was embedded in the photosensitive element, provision of such a transparent electrode is not essential because electric field can be applied across the photosensitive element by other methods. For example, charges may be deposited by exposing the element to corona discharges

of opposite polarity established on the opposite sides of the element. Further, suitable removable transparent electrodes may be placed directly upon or a short distance spaced from the element. It is also possible to form the photosensitive element as a rotary cylinder to permit continuous operations of forming latent images, developing, transfer printing, cleaning and erasing in the well known manner.

We claim:

1. A method of electrophotography comprising the steps of applying a first field across a photosensitive element including a transparent highly insulative layer and a photoconductive layer manifesting persistent internal polarization integrally bonded to said highly insulative layer to deposit an electric charge of a first polarity opposite to that of the majority carriers of said photoconductive layer on the surface of said highly insulative layer; projecting upon said photoconductive layer an image of a screen from the side of said photosensitive element opposite said highly insulative layer concurrently with the application of said first field; said photoconductive layer having a thickness such that light portions of said screen image do not cause substantial excitation of said photoconductive layer on the side adjacent said insulative layer; applying a second field across said photosensitive element to deposit an electric charge of the polarity opposite to said first polarity on the surface of said highly insulative layer; and projecting a light image upon said photoconductive layer through said highly insulative layer concurrently with the application of said second field whereby to form a latent image corresponding to said light image on the surface of said highly insulative layer.

2. The method of electrophotography according to claim 1 wherein said first and second fields are established by corona discharge.

3. The method of electrophotography according to claim 1 wherein said photosensitive element further includes a transparent electrode layer on the side of said photosensitive element opposite said highly insulative layer and wherein said image of said screen is projected through said transparent electrode layer.

4. The method of electrophotography according to claim 1 wherein said latent image is developed under ambient light.

5. A method of electrophotography comprising the steps of preparing a photosensitive element including a transparent highly insulative layer, a photoconductive layer manifesting persistent internal polarization and a layer of screen structure, said layers being laminated in the order

mentioned and bonded together into an integral structure, applying a first electric field across said photosensitive element to deposit charge of a first polarity opposite to that of the majority carriers of said photoconductive layer on the surface of said highly insulative layer; projecting uniform light upon said photoconductive layer from the side thereof opposite said highly insulative layer concurrently with the application of said first electric field; said photoconductive layer having a thickness such that said uniform light does not cause substantial excitation of said photoconductive layer on the side adjacent said insulative layer; applying a second electric field across said photosensitive element to deposit a charge of a polarity opposite to said first polarity on the surface of said highly insulative layer, and projecting a light image on said photoconductive layer through said highly insulative layer concurrently with the application of said second electric field whereby to form a latent image corresponding to said light image on the surface of said highly insulative layer.

6. The method of electrophotography according to claim 5 wherein said latent image is developed under ambient light.

7. The method of electrophotography according to claim 5 wherein said photosensitive element further includes a second highly insulative layer interposed between and integrally bonded to said photoconductive layer and said layer of screen structure.

8. The method of electrophotography according to claim 5 wherein said photosensitive element further includes a transparent electrode layer interposed between and integrally bonded to said photoconductive layer and said layer of screen structure.

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