

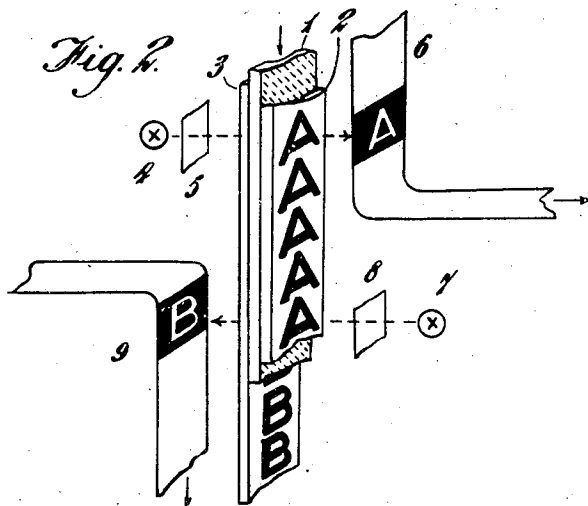
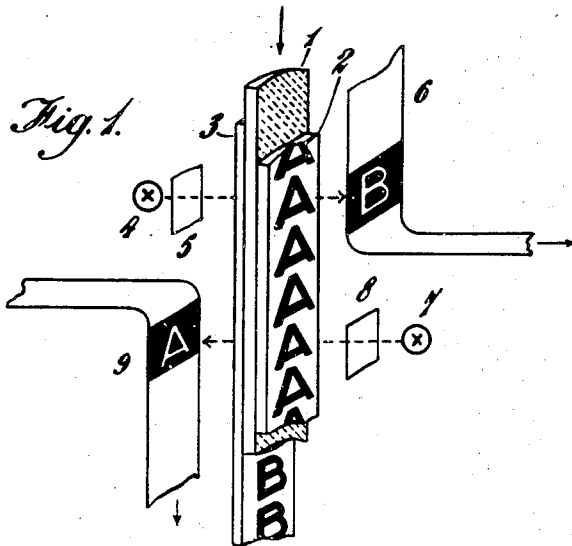
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PROCESS AND MATERIAL FOR PRINTING PHOTOGRAPHIC IMAGES

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PROCESS AND MATERIAL FOR PRINTING
PHOTOGRAPHIC IMAGES

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The present invention relates to the produc-
tion of photographic prints from a photographic
original, containing different photographic im-
ages in the different layers of a multi-layer ma-
terial. The invention renders possible the pro-
duction of separate prints of the various super-
posed photographic images, such as, for example,
stereoscopic part-images or component color-
images of a multi-color picture which during the
exposure of a multi-layer material are obtained
in the different layers thereof.

According to the present invention, separate
prints of these different part-images are pro-
duced by light-rays originating from a fluores-
cence in the multi-layer material itself. The
process may be carried out in several ways.

For example, a fluorescent substance is incor-
porated in the image-bearing layers, either prior
to the exposure or afterwards. Thus for exam-
ple, after the silver halide layers have been de-
veloped and fixed to produce silver images, the
film may be impregnated with a solution of a
fluorescent substance. This fluorescent sub-
stance may be colored or uncolored and may be
of such a kind that it fluoresces on exposure to
ultra-violet or to visible light. The double-
coated original material is then illuminated by
light-rays that cause the added substance to
fluoresce. The secondary light-rays thus in-
duced are photographically recorded in a light-
sensitive layer that is sensitive to these rays and
which therefore records a latent image corre-
sponding to the area where no silver is present
in the image in the original photographic ma-
terial. The original multi-layer material to be
printed may be exposed from both sides to the
light-rays that cause the added substance to
fluoresce, the layers of the printing material
facing each side, or one image-bearing layer of
the original material may first be exposed to such
light and thereafter the other original image-
bearing layer will be turned towards the layer of
the printing material and exposed to the same
light source. An optical screening layer may be
used between the two original image-bearing
layers. This separating layer contains a dye
which either absorbs the stimulating light-rays
and thus restricts the action to the image-bear-
ing layer facing the printing layer, or the screen-
ing layer may absorb the secondary or fluores-
cent light-rays and therefore eliminates those
rays which originate in the image-bearing layer
turned away from the printing layer. If the
fluorescent substance is stimulated by ultra-
violet light and yields a secondary radiation of

blue light, the optical screening layer therefore
contains either a filter dye which absorbs ultra-
violet and thus prevents a fluorescence in the
layer behind or it contains a filter dye which
absorbs blue light and thereby prevents the sec-
ondary blue radiation originating in the back
layer from affecting the printing layer. The
screening dye may have both properties and in
many cases yellow dyes may be used for this
purpose. The yellow filter dye may be present
within the light-sensitive material prior to ex-
posure and the dye may be soluble in water or
insoluble. Thus, for example, a bipack may be
used, the front film of which carries a blue-
sensitive silver halide layer facing the object dur-
ing exposure, a yellow filter layer and a green-
sensitive emulsion behind this filter layer; the
rear film of the bipack carries a red-sensitive
single layer.

If the presence of a filter dye in the light-
sensitive material is objectionable, an intermedi-
ate layer, containing a dye-forming substance for
the subsequent production of the filter dye, may
be present in the taking material. If the fluo-
rescent substance emits green light, a red dye
is used for the optical screening layer and this
dye may be present in the intermediate layer of
the taking material if, for example, a bipack is
used, the front film of which consists of a blue-
sensitive emulsion, whereas the rear film con-
tains a green-sensitive layer, a red filter layer
and a red-sensitive layer behind the filter layer.
The red filter dye may be an insoluble azo dye
such as Para-red which may be incorporated by
the use of its bisulphite compound as described
in Bela Gaspar's U. S. Patent 2,172,307 of Sept.
5, 1939.

A multi-layer material containing dye-images
instead of silver images may be used for the
printing process. In this case the color of the
dye-images is so selected as to absorb either the
primary radiation which causes the fluorescent
substance to emit the secondary radiation, or so
as to absorb the secondary radiation, or both.

A further suitable modification of the process
consists in incorporating the fluorescent sub-
stance not in the image-bearing layers them-
selves but in a separate layer arranged between
them. A transparent carrier coated on both
sides may contain the fluorescent substance.
This modification of the process is especially suit-
able for printing in contact and with the original
placed between the light source and the printing
layer, whereas in the examples above discussed
the printing light source and the light-sensitive

printing layer are to be arranged on the same side of the image to be printed.

If an intermediate layer or support containing a fluorescent substance is to be used, the pictures to be printed have to be in the form of dye-images and the dye for producing these dye-images is so selected as to absorb either the primary radiation to which the fluorescent substance in the support or the intermediate layer is responsive or so as to absorb the secondary radiation.

If, for example, a fluorescent substance is used that is stimulated by green light and emits a secondary radiation of red light-rays, the first case may be realized by the use of dye-images which absorb green light but allow the passage of red light.

The multilayer original is exposed to green light and the green absorbing dye-image in the layer first struck by the green light-rays absorbs the incident light in an image-like fashion so that the following layer containing the fluorescent substance is only stimulated to fluoresce where it has been struck by the primary green light. The red light-rays thus originating in an image-like fashion within the intermediate layer are not stopped by the presence of the second dye-image situated behind because the dye allows the passage of red light-rays. A red-sensitive printing layer is arranged in contact with, or facing this second layer. The image in the layer first struck by the printing light is copied on to this printing layer.

The second case may be realized also by the use of a fluorescent substance that is stimulated by green light and emits a secondary radiation of red light-rays. In this case, however, the dye-images on either side of the fluorescent layer are both of a color which absorbs red light but allows the passage of green light. The multi-layer material is exposed to green light and this light is transmitted by the first image-bearing layer without any substantial loss of intensity as the dye image has a color which allows the passage of green light. Thus the fluorescent substance is uniformly brought to fluorescence and thus acts as a light source of uniform red radiation. The red light, however, is absorbed in an image-like manner by the dye-image situated behind. In contact with, or facing this second layer there is arranged a red-sensitive printing material and this printing material records a copy of the dye-image present in the second layer. The other dye-image is printed in the same manner by turning the film round and bringing the other side in contact with the printing material. A cinematographic film may be printed in such a manner that simultaneously one image frame is illuminated from one side whilst a second image frame at a certain distance is being illuminated from the other side.

In order to explain the invention by way of an example, attention is directed to the accompanying drawing, in which Fig. 1 shows the arrangement of the multi-layer original film and the two printing films, and in which Fig. 2 shows a similar arrangement in which the multi-layer original carries dye-images of a color different from the color of the dye-images used in the example shown by Fig. 1.

In Fig. 1 the original film comprises two image-bearing layers 2 and 3 with an intermediate layer 1 between them. These three layers are carried on a common transparent support—not shown—or the intermediate layer itself may be the sup-

port. The intermediate layer contains uniformly dissolved therein a fluorescent substance such as rhodamine which if illuminated by green light yields a secondary radiation of red light-rays. The dye concentration may vary widely and 0.1 gram of the dye per sq. m. may be used.

The original film carries two series of different part images in the image-bearing layers 2 and 3, designated by A and B respectively. Both dye-images are formed by a red dye, such as Supranol Brilliant Red B (Schultz Farbstofftabellen, Leipzig 1932, 7th ed. vol. 2, page 204). During the printing process the original film is intermittently led through a printing machine having two printing frames. Behind one of the printing frames there is arranged a light source 4 on one side of the original film so that the light first strikes the image-bearing layer 3. On the opposite side, the printing film 6 is run past the printing frame and this printing film will receive the print of the part-image B.

A second light source 7 is arranged on the side of the original carrying the image-bearing layer 2 with the series of pictures A. This light source is positioned opposite to the other printing frame behind which the printing film 9 is intermittently conducted synchronously with the original film and the other printing layer. The printing film 9 receives the print of image A. Green light filters 5 and 8 respectively are inserted between the light sources 4 and 7 and the original film and red filters (not shown) may be inserted between the original film and the respective printing layer. If the light sources emit only right-rays for which the printing layers are insensitive, the light filters may be dispensed with.

Satisfactory results have been obtained in printing by the light of a mercury lamp in combination with a green filter such as Wratten No. 74 on to a panchromatic printing layer, the red filter being inserted between the original and the printing layer. The composite image to be printed may be formed by superposing two different images both formed by the same magenta dye with the interposition of a gelatin foil containing rhodamine. For producing the fluorescent foil, there are used 700 ccs. of a 7% aqueous gelatin solution, to which 30 ccs. of a 1% acid rhodamine solution have been added; this colored gelatin solution is coated on a surface of 1 sq. m.

For producing the dye-images, silver images developed from exposed silver halide emulsions may be uniformly dyed with a 1% solution of the dye Polarbrillantred 3B (Schultz Farbstofftabellen, Leipzig 1932, 7th ed., vol. II, page 175). After being treated 5 minutes in the dye solution at a temperature of 18° C., the dyed layer is treated with a 1% solution of diphenylguanidine acetate and thereafter with a solution of chromium alum. After drying, the dyed images are treated for 12 minutes with a solution of

Hydrochloric acid (2-normal).....	ccs.....	250
Potassium iodide.....	grams.....	2
2,3-diaminophenazine.....	do.....	0.02
Water.....	ccs.....	750

This solution acts to destroy the dye at the places where silver is present. The remnant silver is bleached by an acid solution of cupric chloride and removed by hypo. The two different images are combined, the gelatin foil containing the rhodamine being placed between them. In a taking material the two silver halide emulsions may be sensitized for different spectral

regions, the one to green light, for example, the other to red light, and arranged on both sides of a transparent support, the fluorescent intermediate layer being separated from the superposed light-sensitive layer by a thin layer of hardened gelatin. Such a double coated film with a green-sensitive front layer may be used as the rear element of a bipack, the front element of which comprises a blue-sensitive silver halide emulsion layer.

In Fig. 2 the arrangement is substantially the same as that described in connection with Fig. 1 except that the series of images A and B of the original film are of a blue-green color. The dye used for these images should practically allow complete passage of light-rays which cause the fluorescence of rhodamine or of any other fluorescent substance that may be used. A suitable dye is, for example, Xylene blue VS conc. (Schultz Farbstofftabellen, Leipzig 1931, 7th ed., vol. I, No. 769). With the same arrangement of light sources, light filters and printing layers, as shown in Fig. 1, the print of the image series A will be obtained on printing layer 6 and the print of the image series B will be obtained on printing layer 8.

Satisfactory results have been obtained in this case by printing with the light of a cadmium lamp in combination with the green Wratten Filter No. 58A, the printing layer used being a panchromatic film, and a red filter being inserted between the original and the printing layer. The image to be printed is formed in this case by applying to each side of the rhodamine-dyed foil described above a blue-green dye-image. Thus, for example, silver images may be treated with a so-called Kodachrome bleacher for about 5 minutes, the bleaching solution being of the following formula:

A. Potassium ferricyanide.....	grams...	38
Potassium bromide.....	do....	57
Potassium bichromate.....	do....	38
Acetic acid.....	ccs...	20
Water.....	ccs...	1000
B. Potassium alum 5%.....	ccs...	1000

A and B being mixed and the solution being diluted with the same volume of water. The film is fixed and dried and thereafter dyed for about 20 minutes with a 0.25% solution of Erioviridine B Supra (Schultz Farbstofftabellen, l. c., vol. 1, No. 767).

Instead of the rhodamine used in the description of the examples, other fluorescent substances may be used such as for example, fluoresceine, auramine, acridine salts and so on.

Other image-forming dyes than those mentioned above may be used and in each case the image-forming dye will be so selected as to absorb either the primary light-rays or the secondary rays, dependent on the nature of the fluorescent substance incorporated in the intermediate layer. The dye-images may be prepared in any suitable manner, for instance, by dyeing gelatin reliefs or by forming relief images in pre-dyed layers, by color development of the dye-images, by mordanting or by dye-toning processes or by local dye destruction. The light sources used in the process should have a sufficient light intensity and should be arranged in such a manner that the original film is intensely illuminated in order to produce an intense fluorescence within the original film.

The fluorescent substance may be present in

the original film prior to the production of the dye-images in the image-bearing layers or may be produced afterwards from dye-forming substances that are transformed into a fluorescent body. If the fluorescent substance is of such kind as to be stimulated by X-rays the light sources above described are replaced by a Roentgen-tube.

It will be understood that the invention is applicable not only to the selective printing of color separation images, but that any of the part images of a composite picture can be selectively reproduced. Nor is it essential that the reproduction is performed on a light-sensitive photographic layer. As a matter of fact, the part images may be inspected directly by the eye or they may be reproduced in any desired manner; for instance, they may be projected on a projection screen, or on the light-responsive device of a television apparatus. The term "fractionating by light" used in the appended claims is employed in the broadest sense, including the above alternatives. The term "composite picture" as used in the claims is not restricted to the part images of a multicolor picture, but is employed in a broader sense, including, for instance, pictures formed by superimposed part images of a stereoscopic picture. The term "dye" as used in the claims is to be understood as including also substances that are practically colorless to the human eye but that are used in view of their light-absorption properties, even if this absorption is effective for invisible light only.

What I claim is:

1. A composite picture record comprising at least two part records in superposed planes and a luminescent substance uniformly distributed over the total picture area of the composite record in an intermediate plane between two part records, said luminescent substance, under the influence of light of a predetermined spectral composition, emitting a luminescent-light of a different spectral composition, and said two part records being dye-images of a color which transmits the one of said lights and absorbs the other one of said lights.

2. A composite picture record comprising at least two part records in superposed planes and a fluorescent substance uniformly distributed over the total picture area of the composite record in an intermediate plane between two part records, said fluorescent substance, under the influences of light of a predetermined spectral composition, emitting a fluorescent-light of a different spectral composition, and said two part records being dye-images of a color which transmits the one of said lights and absorbs the other one of said lights.

3. A composite picture record comprising a transparent support, at least one coating on each side of the support, one part record in a coating on one side and another part record in a coating on the opposite side of said support, and a luminescent substance uniformly distributed over the total picture area of the composite record in an intermediate plane between said two part records, said luminescent substance, under the influence of light of a predetermined spectral composition, emitting a luminescent-light of a different spectral composition, and said two part records being dye-images of a color which transmits the one of said lights and absorbs the other one of said lights.

4. A composite picture record comprising a transparent support, at least one coating on each side of the support, one part record in a coating

on one side and another part record in a coating on the opposite side of said support and a luminescent substance in the support uniformly distributed over the total picture area of the composite record, said luminescent substance, under the influence of light of a predetermined spectral composition, emitting a luminescent-light of a different spectral composition, and said two part records being dye-images of a color which transmits the one of said lights and absorbs the other one of said lights.

5. A composite picture record comprising a plurality of superimposed layers, a part record in one layer, another part record in another layer and a luminescent substance uniformly distributed over the total picture area of the composite record in an intermediate layer between said two layers, said luminescent substance, under the influence of light of a predetermined spectral composition, emitting a luminescent-light of a different spectral composition, and said two part records being dye-images of a color which transmits the one of said lights and absorbs the other one of said lights.

6. A composite picture record comprising a transparent support, a plurality of coatings on the same side of the support, two of said coatings each having therein a different part record, a luminescent substance being uniformly distributed over the total picture area of the composite record in an intermediate plane between said two part records, said luminescent substance, under the influence of light of a predetermined spectral composition, emitting a luminescent-light of a different spectral composition, and said two part records being dye-images of a color which transmits the one of said lights and absorbs the other one of said lights.

7. A composite picture record as claimed in claim 1, in which the part records are different color separation records of a multicolor object.

8. A composite picture record as claimed in claim 1, in which the two part records are dye-images of substantially identical color.

9. A composite picture record as claimed in claim 1, in which the two part records are dye images of a color that transmits at least a part of the fluorescence-light but absorbs at least a part of the light to which the fluorescent substance is responsive.

10. A composite picture record as claimed in claim 1, in which the two part records are dye-images of a color that transmits at least a part of the light to which the fluorescent substance is responsive but absorbs at least a part of the fluorescence-light.

11. A process for fractionating by light different part records of a composite picture record comprising said part records in superposed planes and a luminescent substance which under the influence of light of a predetermined spectral composition, emits luminescent-light of a different spectral composition and is uniformly distributed over the total picture area of the composite record in an intermediate plane between said part records, said part records being dye-images of a color absorbent for the one of said lights and transmittant for said other light, which comprises, illuminating said composite record from one side with light of said predetermined spectral composition and printing one of said part records on a light-sensitive photographic layer which is responsive to the luminescent-light and which is located on the other side of said composite record.

12. A process for fractionating by light different part records of a composite picture record comprising said part records in superposed planes and a fluorescent substance which under the influence of light of a predetermined spectral composition emits fluorescent light of a different spectral composition and is uniformly distributed over the total picture area of the composite record in an intermediate plane between said part records, said part records being dye-images of a color absorbent for the one of said lights and transmittant for said other light, which comprises, illuminating said composite record from one side with light of said predetermined spectral composition and printing one of said part records on a light-sensitive photographic layer which is responsive to the fluorescent-light and which is located on the other side of said composite record.

13. A composite record comprising two superposed image-bearing layers and a fluorescent substance uniformly distributed over the total picture area of the composite record incorporated therein, which, under the influence of light of a predetermined spectral composition emits light of a different spectral composition, each image-bearing layer carrying an image corresponding to a different part record and being formed by a substance of such absorption and transmittance characteristics that, of the light to which the fluorescent substance is responsive and of the differently colored fluorescence-light, the one light is substantially transmitted and the other light is substantially absorbed by said images.

14. A process for fractionating by light different part records of a photographic transparency comprising said part records in superposed layers and a luminescent substance uniformly distributed throughout said layers which, under the influence of light of a predetermined spectral composition, emits luminescent light of a different spectral composition, said part records being absorbent for at least one of said lights and screening means in a plane intermediate said superposed layers which absorbs at least one of said lights and which is substantially transmittant for the other of said lights which comprises, illuminating said transparency by light of said predetermined spectral composition and reproducing one of said part records by luminescent light emanating therefrom.

15. A process for fractionating by light different part records of a photographic transparency comprising said part records in superposed layers and a luminescent substance uniformly distributed throughout said layers which, under the influence of light of a predetermined spectral composition, emits luminescent light of a different spectral composition, said part records being absorbent for at least one of said lights and screening means in a plane intermediate said superposed layers which absorbs at least one of said lights and which is substantially transmittant for the other of said lights which comprises, illuminating each side of said transparency by light of said predetermined spectral composition, and separately reproducing each part record by luminescent light emanating therefrom.

16. In a process for fractionating by light different part records of a photographic transparency comprising said part records in superposed layers and a luminescent substance uniformly distributed throughout said layers, said luminescent substance emitting fluorescent light of one spectral composition under the influence of light

of a different spectral composition, said part records being absorbent for one of said lights and screening means in a plane intermediate said superposed layers which absorbs at least one of said lights and which is substantially transmittant for the other of said lights which comprises, illuminating said transparency with light rays to which said luminescent substance is responsive and recording one of said part records by luminescent light emanating therefrom onto a light sensitive photographic layer.

17. In a process for fractionating by light different part records of a photographic transparency comprising said part records in superposed layers and a luminescent substance uniformly distributed throughout said layers, said luminescent substance emitting fluorescent light of one spectral composition under the influence of light of a different spectral composition, said part records being absorbent for one of said lights and screening means in a plane intermediate said superposed layers which absorbs at least one of said lights and which is substantially transmittant for the other of said lights which comprises, illuminating each side of said transparency with light rays to which said luminescent substance is responsive, and separately recording each of said part records by luminescent light emanating therefrom.

18. In a process for fractionating by light different part records of a composite picture record comprising said part records in superposed planes and a luminescent substance uniformly distributed over the total picture area of the composite record in an intermediate plane, said luminescent substance emitting luminescent light of one spectral composition under the influence of light of a different spectral composition and said part records being dye images of a color absorbent for one of said lights and transmittant for the other of said lights which comprises, illuminating said composite record with light rays to which said luminescent substance is responsive and recording one of said dye images by the luminescent light passing through said other dye image onto a light sensitive photographic layer.

19. In a process for fractionating by light different part records of a composite picture record comprising said part records in superposed planes and a fluorescent substance uniformly distributed over the total picture area of the composite record in an intermediate plane, said fluorescent substance emitting fluorescent light of one spectral composition under the influence of light of a different spectral composition and said part records being dye images of a color absorbent for one of said lights and transmittant for the other of said lights which comprises, illuminating said composite record with light rays to which said fluorescent substance is responsive and recording one of said dye images by the fluorescent light passing through said other dye image onto a light sensitive photographic layer.

20. In a process for fractionating by light different part records of a composite picture record comprising said part records in superposed planes and a luminescent substance uniformly distributed over the total picture area of the composite record in an intermediate plane, said luminescent substance emitting luminescent light of one spectral composition under the influence of light of a different spectral composition and said part records being dye images of a color absorbent for one of said lights and transmittant for the other of said lights which comprises,

illuminating said composite record with light rays to which said luminescent substance is responsive, recording one of said dye images by the luminescent light passing through said other dye image onto a light sensitive photographic layer, and filtering the light used to illuminate said composite record to eliminate light to which said light sensitive photographic layer is sensitive.

21. In a process for fractionating by light different part records of a composite picture record comprising said part records in superposed planes and a luminescent substance uniformly distributed over the total picture area of the composite record in an intermediate plane, said luminescent substance emitting luminescent light of one spectral composition under the influence of light of a different spectral composition and said part records being dye images of a color absorbent for one of said lights and transmittant for the other of said lights which comprises, illuminating said composite record with light rays to which said luminescent substance is responsive, recording one of said dye images by the luminescent light passing through said other dye image onto a light sensitive photographic layer, and filtering the light passed to said light sensitive layer to eliminate light to which said luminescent substance is responsive.

22. In a process for fractionating by light different part records of a composite picture record comprising said part records in superposed planes and a luminescent substance uniformly distributed over the total picture area of the composite record in an intermediate plane, said luminescent substance emitting luminescent light of one spectral composition under the influence of light of a different spectral composition and said part records being dye images of a color absorbent for one of said lights and transmittant for the other of said lights which comprises, illuminating said composite record with light rays to which said luminescent substance is responsive, recording one of said dye images by the luminescent light passing through said other dye image onto a light sensitive photographic layer, filtering the light used to illuminate said composite record to eliminate light to which said light sensitive photographic layer is sensitive, and filtering the light passed to said light sensitive layer to eliminate light to which said luminescent substance is responsive.

23. In a process for fractionating by light different part records of a composite picture record comprising said part records in superposed planes and a luminescent substance uniformly distributed over the total picture area of the composite record in an intermediate plane, said luminescent substance emitting luminescent light of one spectral composition under the influence of light of a different spectral composition and said part records being dye images of a color absorbent for one of said lights and transmittant for the other of said lights which comprises, illuminating said composite record with light rays to which said luminescent substance is responsive and projecting one of said dye images by the luminescent light passing through said other dye image onto a light sensitive device.

24. In a process for fractionating by light different part records of a composite picture record comprising said part records in superposed planes and a fluorescent substance uniformly distributed over the total picture area of the composite record in an intermediate plane, said fluo-

rescent substance emitting fluorescent light of one spectral composition under the influence of light of a different spectral composition and said part records being dye images of a color absorbent for one of said lights and transmittant for the other of said lights which comprises, illuminating said composite record with light rays to which said fluorescent substance is responsive and projecting one of said dye images by the fluorescent light passing through said other dye image onto a light sensitive device.

25. In a process for fractionating by light different part records of a composite picture record comprising said part records in superposed planes and a luminescent substance uniformly distributed over the total picture area of the composite record in an intermediate plane, said luminescent substance emitting luminescent light of one spectral composition under the influence of light of a different spectral composition and said part records being dye images of a color absorbent for one of said lights and transmittant for the other of said lights which comprises, illuminating said composite record with light rays to which said luminescent substance is responsive, projecting one of said dye images by the luminescent light passing through said other dye image onto a light sensitive device, and filtering the light used to illuminate said composite record to eliminate light to which said light sensitive device is sensitive.

26. In a process for fractionating by light different part records of a composite picture record comprising said part records in superposed planes and a luminescent substance uniformly distributed over the total picture area of the composite record in an intermediate plane, said luminescent substance emitting luminescent light of one spectral composition under the influence of light of a different spectral composition and said part records being dye images of a color absorbent for one of said lights and transmittant for the other of said lights which comprises, illuminating said composite record with light rays to which said luminescent substance is responsive, projecting one of said dye images by the luminescent light passing through said other dye image onto a light sensitive device, and filtering the light passed to said light sensitive device to eliminate light to which said luminescent substance is responsive.

27. In a process for fractionating by light different part records of a composite picture record comprising said part records in superposed planes and a luminescent substance uniformly distributed over the total picture area of the composite record in an intermediate plane, said luminescent substance emitting luminescent light of one spectral composition under the influence of light of a different spectral composition and said part records being dye images of a color absorbent for one of said lights and transmittant for the other of said lights which comprises, illuminating said composite record with light rays to which said luminescent substance is responsive, projecting one of said dye images by the luminescent light passing through said other dye image onto a light sensitive device, filtering the light used to illuminate said composite record to eliminate light to which said light sensitive device is sensitive, and filtering the light passed to said light sensitive device to eliminate light to which said luminescent substance is responsive.

28. A photographic transparency comprising at least two part records in superposed layers and

a fluorescent substance uniformly distributed throughout said layers, said fluorescent substance emitting fluorescent light of one spectral composition under the influence of light of a different spectral composition, said part records being absorbent for one of said lights and screening means in a plane intermediate said superposed layers which is absorbent for at least one of said lights and substantially transmittant for the other of said lights.

29. A process of producing a composite record, which comprises forming on each side of a screening layer an image corresponding to a different part record of said composite record, and thereafter introducing a fluorescent substance into said composite record in such a way that it is uniformly distributed throughout said record, said fluorescent substance emitting fluorescent light of one spectral composition under the influence of light of a different spectral composition, the absorption characteristics of said images being such that they are absorbent for at least one of said lights, and said screening layer being absorbent for one of said lights and substantially transmittant for the other of said lights.

30. A process of producing a composite record, which comprises forming a dye image on each side of a transparent luminescent layer emitting luminescent light of a predetermined spectral composition under the influence of light of a different spectral composition, said dye-images each corresponding to a different part record of the composite record, and the dye used for producing the dye-images having such absorption and transmittance characteristics that, of the light to which the luminescent substance is responsive and of the differently colored luminescent light, the one light is substantially transmitted and the other light is substantially absorbed by said dye-images.

31. A process for producing a print of one of the colored part records of a photographic transparency comprising a composite picture including different superposed colored part records and a luminescent substance uniformly distributed over the total picture area of said composite picture in a plane intermediate the colored part records, the colored part record to be printed being one whose predominant spectral absorption range includes only light of a predetermined spectral composition also absorbed to a substantial extent by another colored part record and the luminescent material being one which responds to light of said predetermined spectral composition to produce light of a different spectral composition not absorbed to any substantial extent by said other colored part record, which comprises, illuminating said record to be printed with light substantially absorbed by the coloring substance forming the same and substantially unabsorbed at those portions where no coloring substance is present, and recording the light produced by said luminescent substance through said other part record on a printing layer which is sensitive thereto.

32. A process for producing a print of one of the colored part records of a photographic transparency comprising a composite picture including different superposed colored part records and a fluorescent substance uniformly distributed over the total picture area of said composite picture in a plane intermediate the colored part records, the colored part record to be printed being one whose predominant spectral absorption range in-

cludes only light of a predetermined spectral composition also absorbed to a substantial extent by another colored part record and the fluorescent material being one which responds to light of said predetermined spectral composition to produce light of a different spectral composition not absorbed to any substantial extent by said other colored part record, which comprises, illuminating said record to be printed with light substantially absorbed by the coloring substance forming the same and substantially unabsorbed at those portions where no coloring substance is present, and recording the light produced by said fluorescent substance through said other part record on a printing layer which is sensitive thereto.

33. A process for fractionating by light one of the part records of a photographic transparency comprising photographic part records in superposed layers with the aid of a quantity of luminescent substance uniformly distributed over the total area of said transparency and disposed between the outer surface of the layer to be printed and the next succeeding layer, the part record to be printed being one whose predominant spectral absorption range includes only light of a predetermined spectral composition also absorbed to a substantial extent by another superposed part record, said luminescent material emitting luminescent light of one spectral composition in response to exposure to light of a different spectral composition and at least one of said lights being within and the other light being outside said predominant absorption range, which comprises, illuminating said transparency from one side with light to which said luminescent substance is responsive and recording only emitted luminescent light.

34. A photographic transparency comprising at least two images in superposed layers each of which is a color separation record of a multicolor picture with a quantity of luminescent substance uniformly distributed over the total area of said transparency and disposed between the outer surface of one of said layers and the next adjacent layer, the said one of said layers being one whose predominant absorption range includes only light of a predetermined spectral composition also absorbed to a substantial extent by another superposed part record, said luminescent substance being one which emits luminescent light of one spectral composition in response to light of a different spectral composition, at least one of said lights being within and the other being outside said predominant absorption range.

35. A photographic transparency comprising at least two images in superposed layers each of which is a color separation record of a multicolor picture with a quantity of fluorescent substance uniformly distributed over the total area of said transparency and disposed between the outer surface of one of said layers and the next adjacent layer, the said one of said layers being one whose predominant absorption range includes only light of a predetermined spectral composition also absorbed to a substantial extent by another superposed part record, said fluorescent substance being one which emits fluorescent light of one spectral composition in response to light of a different spectral composition, at least one of said lights being within and the other being outside said predominant absorption range.

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