

UNITED STATES PATENT OFFICE

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METHOD OF OBTAINING IMAGES OF TWO
DIFFERENT CONTRASTS ON A SINGLE
FILM WITH A SINGLE DEVELOPMENTJohn G. Capstaff, Rochester, N. Y., assignor to
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corporation of New YorkNo Drawing. Application November 12, 1931
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5 Claims. (Cl. 95—5)

This invention relates to a method of producing photographic images. It is especially suitable for making prints on positive film in which there are two images in a single film, each image possessing a different degree of contrast.

It has been previously shown that treatment of an exposed, undeveloped, silver bromide emulsion with a solution of a suitable oxidizing agent lowers the contrast or gamma obtained when the image printed thereon is developed. In applying this principle to motion picture film, I have found that although the contrast is lowered for the image printed before treatment with the oxidizing agent the contrast is not lowered for an image printed after such treatment. Thus I have found that by printing two images, one before, one after, treatment and subsequently developing the film, the two images obtained will possess different gammas.

As an oxidizing agent I use, preferably, a dilute solution of chromic acid. Such a bath is, for example, a ½% solution of chromic acid in water. Another satisfactory oxidizing bath is the following:

Copper sulfate.....	1 gram
Sodium chloride.....	1 gram
Water.....	100 C. C.

In carrying out my invention I print one image or series of images, submit the film to the action of an oxidizing bath such as those just mentioned, rinse, dry, and then print the second image or series of images. After printing the second time, the film is submitted to the usual developing and fixing operations in solutions which are well-known for the purpose.

The contrast of the first printed image compared with that of the second image may be varied and controlled according to the concentration of the oxidizing bath. For this purpose I may, therefore, vary the concentrations from those stated above. The higher the concentration of the oxidizing substance, the lower is the gamma of the first printed image. With low concentration there is very little loss of effective speed, but at higher concentration there is a slight loss of speed.

The following are examples of useful applications of my invention:

Example I.—In sound films in which the sound track is printed beside the picture areas, it is sometimes desirable to develop and print so that the sound track and the picture areas will have different gammas. This will be true at times when either the sound record or the picture record,

or both, have not been developed to such a degree of contrast as to allow them both to be printed and developed together in the ordinary way with satisfactory results. In such a case, one of the records, either the sound or the picture areas, as required, may be printed before and the other record printed after treatment with an oxidizing bath as outlined. This condition may arise, for example, when a so-called silent picture has been taken and the negative developed to a very high degree of contrast and it is later desired to add a synchronized sound record which may be developed to a lower degree of contrast.

Or the conditions may be reversed, the picture area being of low contrast and the sound of higher. My invention will permit of the two being printed on a single film as is customary, and will allow a reasonable latitude in the correction of the contrasts in the finished records of both sound and scene.

Example II.—In so-called trick motion pictures, desirable results are sometimes found in methods using double exposure effects which may be readily produced by printing two images, one over the other, and giving to one a higher degree of contrast than the other. This may be quite readily accomplished by my invention since, again, one image may be printed before and the other after treatment with an oxidizing bath. A number of possible variations will be apparent to those skilled in the art.

Example III.—In certain color processes color separation images are printed on opposite sides of a double-coated film. These images are developed up in silver by the usual methods and are then given, separately, some special treatment to convert the silver into a colored image. The silver images on the two sides of the film may be made to differ in contrast, if desirable, by my invention, as, again, one may be printed before, and the other after, the treatment in the oxidizing bath.

My invention is not limited by the examples which I have given. It may be applied in any case where it is desired to print two images of different contrasts in a single photographic layer or in any case where it is desired to develop simultaneously two images to different degrees of contrast.

I contemplate as included in my invention all modifications and equivalents falling within the scope of the appended claims.

What I claim is:

1. Method of obtaining two images of dif-

ferent contrasts in a single sensitive silver halide emulsion layer with a single development, which comprises exposing said layer to one light image, submitting said layer to the action of an oxidizing agent, exposing the layer to a second light image and developing both images simultaneously.

2. The method of obtaining two images of different contrasts on a single film sensitized with silver halide with a single development that comprises printing one of the images, submitting the film to the action of an oxidizing agent, drying, printing the second image and developing both images simultaneously.

3. The method of obtaining two images of different contrasts on a single film sensitized with silver halide with a single development that comprises printing one of the images, submitting the film to the action of a dilute solution of chromic acid, drying, printing the second image, and developing both images simultaneously.

4. The method of obtaining combined picture and sound records of different degrees of contrast on the same film sensitized with silver halide with a single development that comprises printing one of the series of images, submitting the film to the action of an oxidizing agent, drying, printing the other series of images and developing both series of images simultaneously.

5. The method of making a trick motion picture on a single motion picture film sensitized with silver halide emulsion in which two images are used in double exposure effects that comprises printing one of the images upon the film, submitting the film to the action of an oxidizing agent, printing the other image upon the same film, and developing the two images simultaneously, whereby different contrasts are obtained for the two images.

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