

UNITED STATES PATENT OFFICE.

ZACHARIAH J. GOLD, OF STELLA, AND WILLIAM M. NEWTON, OF GRANBY, MISSOURI.

PROCESS OF MAKING BLACK AND WHITE NEGATIVES FOR PHOTO-ENGRAVING AND OTHER SIMILAR PHOTOGRAPHIC REPRODUCTIONS.

1,002,386.

Specification of Letters Patent.

Patented Sept. 5, 1911.

No Drawing.

Application filed March 30, 1908. Serial No. 424,246.

To all whom it may concern:

Be it known that we, ZACHARIAH J. GOLD and WILLIAM M. NEWTON, citizens of the United States, and residents, respectively, of Stella and Granby, county of Newton, and State of Missouri, have invented and discovered a new and useful Improvement in the Process of Making Black and White Negatives for Photo-Engraving and other
10 Similar Photographic Reproductions.

The object of our invention and discovery is to produce black and white negatives for photo-engraving, such as half-tones, line plates from pen-drawings, half-tone screens,
15 or negatives with great density and clear lines or dots, on extra rapid gelatin dry plates without intensification or the clearing process or stripping the half-tone negative for reversing or using a mirror or prism, as
20 now done by half-tone engravers; and in about one third the time consumed by the known processes; and effecting a great saving in the cost over the processes wherein wet portrait plates and slow dry portrait
25 plates are used in the old way common to photo-engravers. To accomplish this, take an ordinary photographic camera, put the screen slide in place and the glass screen in place in the usual manner then take an extra
30 rapid gelatin portrait dry plate and place it reversed in the plate-holder, that is with its smooth side back of and next to the glass screen but not in contact, then take a black paper card board with rough or unglazed
35 surfaces and place it against the film side of the dry plate. This black cardboard will absorb any rays of light that penetrate through the dry plate and its film and will avoid halation; then close the plate-holder
40 and expose the plate in the usual way for about one or one and a half minutes; then take the plate-holder to the dark-room and place the plate in the developing tray and pour over a developer composed of the following
45 chemicals in the following proportion:

No. 1: Distilled water, 5 ozs.; hydrochinon, 24 grs.; sulfite of soda crystals, 180 grs.; carbonate of potassium, 120 grs.; sugar,
50 (preferably granulated), $\frac{1}{2}$ teaspoonful.

No. 2: Distilled water, 1 oz.; hyposulfite of soda, 48 grs.

Drop 5 drops of No. 2 into No. 1, if dots are still veiled drop in 3 more drops or sufficient to clear the dots in the high lights be-

fore development starts. After said plate is fully developed place it in a fixing bath composed of two combinations as follows:

No. 1: Distilled water, 86 ozs.; sulfuric acid, 2 dr.; sulfite of soda, $1\frac{1}{2}$ ozs.; chrome
60 alum, $1\frac{1}{2}$ ozs.; dissolve thoroughly.

No. 2: Distilled water, 42 ozs.; hyposulfite of soda, 2 lbs.; dissolve thoroughly, then add No. 2 gradually to No. 1, stirring as added; after said plate is thoroughly fixed wash and
65 dry in the usual manner.

Heretofore in exposing an extra rapid dry plate for a half tone negative the action of light through the clear portions of the screen in the white parts of the picture being
70 copied, caused veiling or halation in what should be clear spaces; and when sufficient time in exposure was given for the dots to coalesce the negatives would not print on the sensitized metal; if the exposure was short-
75 ened the dots would not coalesce and the negative was a failure for this reason. To overcome this halation which is caused by a slight light effect on the bromid of silver of the film, we use a solvent of bromid of silver
80 (which is hyposulfite of soda) in the developer in only sufficient quantity to clear this defect before development begins and thus make fine half tone negatives from
85 extra rapid gelatin dry plates in less than one third the time consumed by the old methods with wet plates or even slow dry
plates made especially for engravers' use; and it is practical under our process to use
90 even a single landscape lens for halftone negatives and do more rapid work than with finer lenses by the old processes and produce splendid halftones. The sugar added to the
95 developer is a preservative to make the solution keep.

To more fully describe the improved process in detail—take an extra fast regular portrait dry plate such as is commonly used by photographers and place said plate reversed and back of the objective or lens
100 and screen in the plateholder, in focus on the copy you wish to half-tone; then place a black paper on the film of said plate and cover it with a card board to make it lie flat or use a black card board; close the plate-
105 holder and place the camera and expose the plate about a minute or a minute and a half with average intensity of light, the rectilinear lens stopped down to focus 32; then take the plateholder to dark room and place the
110

portrait plate in a developing tray and have the temperature about 70 degrees Fahr., and pour on the developer heretofore specified but only enough to cover the plate well, 5 put a lid over the tray and rock it for about one minute in darkness; you can then leave the tray for ten minutes before uncovering to note progress of development; if not then intense enough recover the tray for five 10 minutes more or until sufficiently developed; then place the plate in a fixing bath as heretofore specified; after clearing, wash well and put the negative in a rack to dry.

What we claim as new and desire to secure 15 by Letters Patent is—

1. The process of making black and white negatives for photo-engraving and other similar photographic reproductions, which consists in applying to an extra fast gelatin 20 portrait dry plate after exposing it in a camera in the manner specified, a treatment of a developer composed of distilled water, 6 ozs.; hydrochinon, 24 grs.; sulfite of soda crystals, 180 grs.; carbonate of potassium, 25 120 grs.; sugar, (preferably granulated) $\frac{1}{2}$ teaspoonful; hydrosulfite of soda, 48 grs.; combined in about this proportion then ap-

plying an ordinary fixing bath treatment composed of distilled water, 128 ozs.; sulfuric acid, 2 drams; sulfite of soda, 1 $\frac{1}{2}$ 30 ozs.; chrome alum, 1 $\frac{1}{2}$ ozs.; hydrosulfite of soda, 2 lbs., combined in about this proportion, all substantially as and for the purpose set forth.

2. The process of making black and white 35 negatives for photo-engraving and other similar photographic reproductions, which consists in applying to an extra fast gelatin portrait dry plate after exposure in a camera in the manner specified, a treatment with a 40 developer composed of distilled water, hydrochinon, sulfite of soda crystals, sugar (preferably granulated), hyposulfite of soda, then applying an ordinary fixing bath composed of distilled water, sulfuric acid, 45 sulfite of soda, chrome alum, hyposulfite of soda, all combined and proportioned substantially as specified and for the purpose set forth.

ZACHARIAH J. GOLD.
WILLIAM M. NEWTON.

Witnesses:

J. R. SMITH,
JOHN EDMONSON.

Correction in Letters Patent No. 1,002,386.

It is hereby certified that in Letters Patent No. 1,002,386, granted September 5, 1911, upon the application of Zachariah J. Gold, of Stella, and William M. Newton, of Granby, Missouri, for an improvement in "Processes of Making Black and White Negatives for Photo-Engraving and Other Similar Photographic Reproductions," an error appears in the printed specification requiring correction as follows: Page 2, lines 26 and 31, for the word "hydrosulfite" read *hyposulfite*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 10th day of October, A. D., 1911.

[SEAL.]

E. B. MOORE,
Commissioner of Patents.

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plying an ordinary fixing bath treatment composed of distilled water, 128 ozs.; sulfuric acid, 2 drams; sulfite of soda, $1\frac{1}{2}$ 30 ozs.; chrome alum, $1\frac{1}{2}$ ozs.; hydrosulfite of soda, 2 lbs., combined in about this proportion, all substantially as and for the purpose set forth.

2. The process of making black and white 35 negatives for photo-engraving and other similar photographic reproductions, which consists in applying to an extra fast gelatin portrait dry plate after exposure in a camera in the manner specified, a treatment with a 40 developer composed of distilled water, hydrochinon, sulfite of soda crystals, sugar (preferably granulated), hyposulfite of soda, then applying an ordinary fixing bath composed of distilled water, sulfuric acid, 45 sulfite of soda, chrome alum, hyposulfite of soda, all combined and proportioned substantially as specified and for the purpose set forth.

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