

# UNITED STATES PATENT OFFICE.

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ENFIELD, ENGLAND.

STONE OR PLATE FOR PHOTOMECHANICAL PRINTING AND FOR OTHER PURPOSES, AND METHOD OF  
PREPARING SAME.

SPECIFICATION forming part of Letters Patent No. 707,747, dated August 26, 1902.

Application filed January 31, 1902. Serial No. 92,075. (No model.)

*To all whom it may concern:*

Be it known that we, GERALD FORTESCUE WETHERMAN, printer, a subject of the King of England, and GEORGE HOLZHAUSEN, foreman, a subject of the German Emperor, both residing at Enfield, in the county of Middlesex, England, have invented a certain new and useful Stone or Plate for Photomechanical Printing and for other Purposes, and Method of Preparing the Same, of which the following is a specification and which was originally included in application, Serial No. 84,895, filed December 5, 1901.

In preparing sensitive plates, stones, or the like for printing and for other purposes great difficulty is experienced in so coating the stones, &c., as to produce an absolutely-even layer of sensitive material on the entire surface. If, however, the coating varies in several parts, the grain will also be unequal and the ultimate product (say a transfer or a direct print) will not be as satisfactory as is desirable.

According to the present invention we sensitize a plate, stone, or the like as follows: We prepare, firstly, an emulsion, composition, or mixture the base of which is gelatin sensitized by a chrome compound—say the following: Stock solutions: No. 1, twenty per cent. solution of calcium chlorid; No. 2, ten per cent. solution of chrome alum; No. 3, twenty per cent. solution of ferricyanid of potassium; No. 4, twenty per cent. solution of chlorid of zinc; No. 5, one hundred grams of gelatin dissolved in five hundred cubic centimeters of water; No. 6, ten grams potassium bichromate and fifteen grams of ammonium bichromate dissolved in one hundred cubic centimeters of water. In making No. 5 solution dissolve the gelatin in the water by means of a hot-water bath and when completely dissolved add the whole of No. 6 solution, then mix thoroughly and add forty cubic centimeters No. 1, ten cubic centimeters No. 2, five cubic centimeters No. 3, and five cubic centimeters No. 4 solution. When thoroughly mixed, heat the mixture to a temperature of 50° centigrade and filter. We then take a quantity of this sensitizing mix-

ture and dilute it, taking about one part of the mixture to about three parts of hot water, and with this we flood the plate, stone, or the like, drain it, and before it begins to dry coat the surface with the undiluted sensitizing mixture in the usual manner. This “priming,” as we may call it, enables us to coat any size stone or plate with a coating uniform in thickness over the entire surface of the plate and which will cause the grain also to be uniform over the entire surface.

In some cases instead of using the above sensitizing mixture we use the following to obtain a variation in the grain.

The effect of the two solutions does not materially differ; but it will be found that with some subjects one will work better, with some the other, though it is not possible to lay down a theory or fixed rule thereon. A little practice is the only guide in this as in all photographic manipulations, and the use of either solution depends on the grain required, the following giving, as a rule, a somewhat-coarser grain than the first:

Stock solutions: No. 1, twenty per cent. solution of chlorid of potassium; No. 2, twenty per cent. solution chlorid of calcium; No. 3, one hundred grams gelatin dissolved in four hundred cubic centimeters of water; No. 4, ten grams each of potassium bichromate and ammonium bichromate dissolved in fifty cubic centimeters of water.

Dissolve the gelatin as described above. Mix No. 3 and No. 4 together and add to the mixture twenty-five cubic centimeters of No. 1 and twenty-five cubic centimeters of No. 2.

Whichever of the two mixtures we employ we prefer to prepare the surface to be sensitized as follows:

Clean the surface carefully by the usual methods. Then coat it with the following: Mix one ounce of silicate of potash, one-half grain of tannin, and ten ounces of beer. The addition of tannin is important, as the tannin causes close and firm adherence of the priming on the glass and of the film on the priming. With this mixture the surface to be sensitized is coated, say, by flooding it, then allow it to dry. This will cause the sensi-



tized layer to adhere better than if the plate is unprepared. When dry, apply the priming—i. e., the dilute sensitizer—and proceed to coat with sensitizer of full strength.

5 When coated, the plate or stone is dried at a temperature of from 50° to 60° centigrade. When dry, it is ready for exposure under the negative.

By using first a very dilute sensitizer and then before this dries an undilute sensitizer the coating over the whole surface of even the largest plates—say thirty by forty—will be absolutely even and homogeneous, so that the sensitiveness is in all parts equal and the grain ultimately produced will also be equal in all parts, as the thin coating causes the undilute to “take” well and combines with it perfectly.

What we claim, and desire to secure by Letters Patent of the United States, is—

1. A process of sensitizing a stone, plate or the like by applying thereto first a dilute sensitizing compound or mixture and then an undiluted or full-strength sensitizing compound or mixture.

2. A process of sensitizing a stone plate or the like by applying thereto a preparatory coating, then a “priming” of dilute sensitizing compound or mixture, and finally an undiluted or full-strength sensitizing compound or mixture.

3. A process of preparing sensitized plates stones or the like by first coating the same with a solution of silicate of potash and tannin in beer, drying the same and when dry

“priming” the surface, after which it is coated with full-strength sensitizer.

4. A process of preparing plates stones or the like by a solution of silicate of potash and tannin in beer, priming the same with a dilute sensitizing compound or mixture and, before the priming dries, coating them with undilute sensitizing compound or mixture.

5. A process for sensitizing plates stones or the like with a compound or composition the base of which is gelatin sensitized by chrome salts, preparing such compound or composition in full strength, a like composition or compound greatly diluted, “priming” the surface to be sensitized with the dilute compound or composition, and then coating it with the compound or composition of full strength.

6. A process of sensitizing plates stones or the like by first coating the same with a solution of silicate of potash and tannin in beer, drying this first coating, priming the surface with a dilute compound or composition the base of which is gelatin, and then coating it with a sensitive coating of full-strength compound or composition the base of which is gelatin sensitized by chrome salts.

In testimony whereof we have hereunto set our hands, in presence of two subscribing witnesses, this 16th day of January, 1902.

GERALD FORTESCUE WETHERMAN.

GEORGE HOLZHAUSEN.

Witnesses:

BERNHARD DUKES,  
JAMES I. LAWSON.