UNITED STATES PATENT OFFICE

PAUL EMIL SCHOENFELDER AND EMIL KEHLE, OF NEWARK, NEW JERSEY.

SELF-TONING SENSITIVE PHOTOGRAPHIC PAPER.

SPECIFICATION forming part of Letters Patent No. 568,496, dated September 29, 1896.

Application filed May 5, 1896. Serial No. 590,340. (No specimens.)

To all whom it may concern:

Be it known that we, PAUL EMIL SCHOENFELDER and EMIL KEHLE, citizens of the United States, residing in Newark, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Self-Toning Sensitive Photographic Papers; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention is an improvement on the self-toning sensitive photographic paper as covered by the United States Letters Patents Nos. 560,755 and 560,756, dated May 26, 1896.

The object of our invention is to provide a chemical compound or composition for the preparation of paper, especially glazed paper, porcelain, or any other suitable material on which photographic prints are to be made from a negative plate, whereby the toning of the picture is accomplished simultaneously with the printing, and thus the subjecting of the print, after it is made, to a separate toning-bath is fully avoided, and whereby a slight bluish tone is imparted to the picture.

Our composition consists of the following ingredients combined in the proportions stated, and which we will call "stock" or "ground" solution, viz:

Stock solution A.—Collodion: Pyroxylin, three hundred grains; ether, (*U. S. P.* 1880,) one pound; absolute alcohol, one pound.

Stock solution B.—Fifteen grains of a chlorid of a metal of the platinum class, such as gold, iridium, rhodium, osmium, palladium, or platinum chlorid, said fifteen grains of chlorid being dissolved in one and one-half ounces of alcohol, (forty per cent.)

One and one-half ounces of stock solution A is thoroughly mixed with ten drops of stock solution B, and the following ingredients are added in the proportions stated, viz: (*a*) three grains of an organic acid, such as citric, tartaric, or formic acid, &c., which is dissolved before mixing with the other ingredients in three drops of alcohol; (*b*) fifteen grains of silver nitrate or its equivalent, first dissolved in fifty drops of forty per cent. alcohol; (*c*) one and one-half grains of a chlorid—such as strontium, barium, or zirconium chlorid—dissolved before mixing with the other ingredients in three drops of forty per cent. alcohol; (*d*) two drops of a softening chemical, such as glycerin or castor-oil; (*e*) five to fifty drops of ammonia, (according to its strength,) and (*f*) two to five drops of gold bromid.

The above emulsion is applied to the surface of the material on which the picture or photograph is to be printed.

The surface must be thoroughly dried before using.

After the print has been made it is given a bath in a solution of sodium hyposulfite, one part to fifteen parts of water, in which bath it remains until all superfluous chemicals have been removed from the picture, (about five minutes,) when it is taken out and thoroughly washed in clean water. The picture is then ready for mounting and does not require any additional toning, (as the toning has been accomplished simultaneously with the printing,) and it has a superior finish of a slight bluish tone that will not fade or turn yellow by being exposed to light. By adding ammonia to the emulsion the time of exposure is greatly reduced, and by the gold bromid the tone of the picture is given a slight bluish appearance.

In place of stock solution A a solution can be used composed of gelatin one part and water three parts, in which case the ingredients mentioned under *a*, *b*, and *c* are dissolved in water instead of alcohol.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A chemical composition to be used for preparing the surface of suitable material for photographic purposes, consisting of a chlorid of a metal of the platinum class, silver nitrate, a holding substance, an organic acid, such as citric acid, and ammonia, substantially as described.

2. A chemical composition to be used for preparing the surface of suitable material for photographic prints, consisting of a salt of a metal of the platinum class, silver nitrate, a holding substance, such as collodion, an organic acid, such as citric acid, glycerin, and ammonia, substantially as described.

3. A chemical composition to be used for preparing the surface of suitable material for photographic prints, consisting of a holding substance, such as collodion, a salt of a metal of the platinum class, silver nitrate, a chlorid, such as strontium chlorid, a softening ingredient, such as glycerin, an organic acid, such as citric acid, and ammonia, substantially as described.

4. A chemical composition to be used for preparing the surface of suitable material for photographic prints, consisting of a salt of a metal of the platinum class, silver nitrate, a holding substance, such as collodion, an organic acid, such as citric acid, glycerin, ammonia, and gold bromid, substantially as described.

5. A chemical composition to be used for preparing the surface of suitable material for photographic prints, consisting of a holding substance, such as collodion, a salt of a metal of the platinum class, silver nitrate, a chlorid, such as strontium chlorid, a softening ingredient, such as glycerin, an organic acid, such as citric acid, ammonia, and gold bromid, substantially as described.

In testimony that we claim the foregoing we have hereunto set our hands this 29th day of April, 1896.

PAUL EMIL SCHOENFELDER.
EMIL KEHLE.

Witnesses:
ALFRED GARTNER,
REINHOLD SIGERIST.