

UNITED STATES PATENT OFFICE.

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PROCESS OF TONING BLUE PHOTOGRAPHIC SILVER PICTURES.

1,009,100.

Specification of Letters Patent.

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No Drawing.

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To all whom it may concern:

Be it known that I, PAUL REHLÄNDER, doctor of philosophy, chemist, citizen of the German Empire, residing at Charlottenburg, Kingdom of Prussia, German Empire, have invented a new and useful Improvement in Processes of Toning Blue Photographic Silver Pictures, of which the following is a specification.

It is known that photographic silver pictures, especially bromid silver and gas light pictures, may be given a blue tone in a bath containing potassium ferricyanid (K_3FeCy_6), called in the trade red prussiate of potash, a ferric salt, for instance, ammonium ferric citrate, and an acid, for instance, acetic or citric acid. The blue tones so obtained are fast against light but have in the deeper shades a greenish black touch. It has been attempted to modify this tone, as in German Patent No. 200,194, where it is stated that by employing salts of cobalt with iron salts a neutral tint may be obtained.

According to the present invention a pure blue tone approaching Delft blue may be obtained in pictures toned blue in the ordinary way by means of ferric salts and potassium ferricyanid by treating such blue-toned pictures with a dilute solution containing a thiosulfate, for instance, sodium thiosulfate ($Na_2S_2O_3$) and potassium ferricyanid, preferably in about the proportion of one per cent. of sodium thiosulfate and one-half of one per cent. of potassium ferricyanid. This can be conveniently done by adding to the original blue toning bath, after the picture has been toned therein, a small quantity of sodium thiosulfate, preferably about one per cent., and immersing the picture in a wet condition in this modified bath, or by immersing the wet picture in a second toning bath containing preferably about one-half of one per cent. of potassium ferricyanid and about one per cent. of sodium thiosulfate. In any event the proportion of thiosulfate should not exceed five per cent. and that of potassium ferricyanid should not exceed one-half of

one per cent. because higher proportions of these ingredients would cause the bath to attack the picture, dissolve the blue iron salts and color the white portions blue.

In the thiosulfate bath the picture loses entirely the greenish black tint and takes a tone which is very similar to that of Delft blue.

As an example, I proceed in the following manner: I bathe the picture to be toned blue in the ordinary bath (potassium ferricyanid 0.2 grams, ferric citrate 0.2 grams, citric acid 0.8 grams and water 100 cubic centimeters) for about five minutes, wash it for half an hour in water and then bathe it for a short time (about one-half to two minutes) in a solution of 0.05 grams of potassium ferricyanid and 0.1 gram of sodium thiosulfate in 100 cubic centimeters of water. The picture is then washed and dried.

I claim as my invention:

1. The herein described process of modifying the blue tone of photographic pictures which have been toned by means of a bath containing potassium ferricyanid and a ferric salt, such process consisting in treating the toned picture with a dilute solution containing not exceeding five per cent. of a thiosulfate and not exceeding one-half of one per cent. of potassium ferricyanid, substantially as set forth.

2. The herein described process of modifying the blue tone of photographic pictures which have been toned by means of a bath containing potassium ferricyanid and a ferric salt, such process consisting in removing the picture from the bath, adding to the bath not exceeding five per cent. of a thiosulfate and immersing the picture in the altered bath, substantially as set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

PAUL REHLÄNDER.

Witnesses:

HENRY HASPER,
WOLDEMAR HAUPT.