(No Model.)

T. C. ROCHE.

PHOTOGRAPHIC SENSITIVE PAPER.

No. 328,431. Patented Oct. 13, 1885.

Fig. 1.

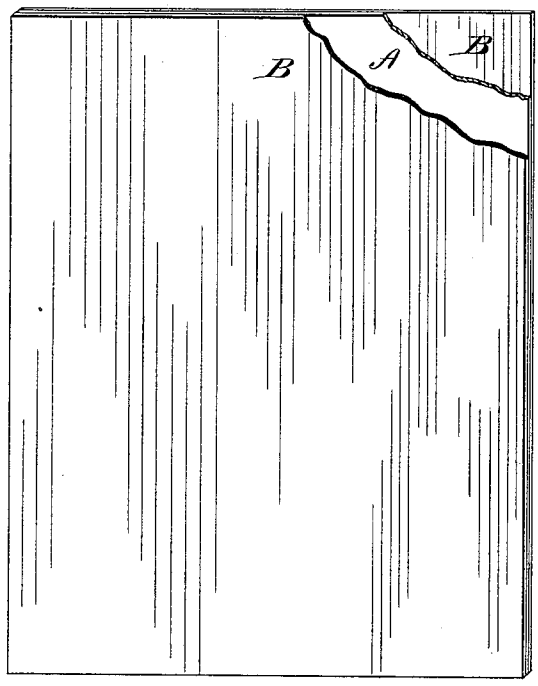
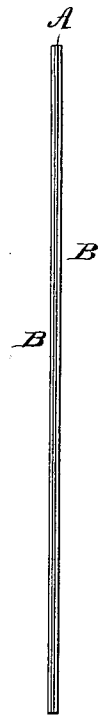


Fig. 2.



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PHOTOGRAPHIC SENSITIVE PAPER.

SPECIFICATION forming part of Letters Patent No. 328,431, dated October 13, 1885.

Application filed December 24, 1884. Serial No. 151,119. (No model.)

To all whom it may concern:

Be it known that I, THOMAS C. ROCHE, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Photographic Sensitive Papers, of which the following is a full, clear, and exact description.

Many efforts have heretofore been made to provide a ready way whereby paper could be rendered practically available in general photographic operations as a substitute for glass, which is objectionable on account of its fragile nature, thickness, weight, and great expense. The use of paper as heretofore prepared for photographic purposes has been attended with difficulties, among which are the appearance of the grain of the paper in printing with paper negatives, and the lack of strength or contrast in the shadows of the picture. To increase the strength or contrast of the shadows, it has been common for the operator to touch up the backs of the paper negatives or prints with ink applied by hand—a work that requires time, skill, and expense, and is even then defective, owing to the difficulty of placing the strengthening-inks in the proper position on the backs of the pictures. By my invention all these difficulties are overcome; and it consists in a photographic paper having both of its sides or surfaces rendered sensitive to light by coverings or films composed of any of the ordinary well-known emulsions of gelatine and silver. Upon a photographic paper thus prepared negative and positive pictures may be produced by the ordinary methods, and by reason of the presence of the sensitive materials or films upon both sides of the sheet of paper certain new and important qualities are imparted to the picture, as will be hereinafter set forth.

Referring to the accompanying drawings, which form a part of this specification, Figure 1 is a perspective view of a sheet of paper inclosed between two sensitive films in accordance with my invention. Fig. 2 is an edge elevation of the same, showing the sensitive material on both sides of the paper.

A in the accompanying drawings represents the body of a sheet of photographic paper provided with two films of the within-described sensitive material B, which incase the sheet between them, as shown.

In carrying out my invention I make use, preferably, of the Rives or Saxe paper, well-known in the trade; but any other suitable paper or flexible material through which light may act, and the surface of which is suited to receive the sensitized emulsion, will answer.

For the coating of the paper any of the ordinary sensitive gelatino-argentic solutions may be employed, of which the following is mentioned as a single example: Fine gelatine three hundred grains; water, ten ounces; bromide of potassium, one hundred and forty grains; nitrate of silver, two hundred grains. These ingredients are to be mixed, cooked, washed, and filtered, and treated with chrome-alum or tannin to render the mixture insoluble, all in the ordinary manner well-known to photographers, further description being therefore unnecessary. The emulsion having been duly prepared is placed in a suitable vessel and kept at a temperature of 120° to 130° Fahrenheit, and the paper is then immersed in the emulsion so that both sides will be thereby evenly covered; or the paper may be first coated on one side with the emulsion and then coated on the other side. After the paper is thus coated it is to be dried in the ordinary manner, and when dry it is ready for use. One of the practical results arising from the combination of the two gelatino-bromide films with the paper is that prints made from negatives composed of such paper are free from the appearance of what is termed "grain." The two gelatine films and the paper combined have a modifying effect upon the light to such an extent and of such character that the grain of the paper no longer shows itself in the print.

My improved paper may be used in the camera for the production of negatives, or in printing-frames for positive pictures in the usual manner. Either side of the prepared sheet may be subjected to the action of the light, which not only takes effect upon the front film, or that which receives the direct light, but the light also passes through the paper and acts upon the sensitive film that covers the back of the paper.

After the picture is taken it is to be developed on both sides of the sheet by the application thereto of any of the well-known developing agents suitable for emulsion-pictures. I at present prefer what is known as the "ferrous oxalate developer." The developer is, as stated, to be applied to both sides of the emulsion-covered paper, the effect of which is to develop or bring out two pictures—one upon each side of the sheet—the two being coincident, the paper being inclosed between the two pictures.

Paper negatives produced on my improved paper have novel and valuable qualities. The high lights will be reproduced on both sides of the sheet according to the strength or intensity of the light reflected from the object. The side which has been exposed to the direct light shows the strongest impression, while on the reverse or back side there is produced what might be termed an "outline or key" of the picture. By the development of the picture on both sides of the sheet a much greater density of color in the picture is produced, and the positive prints made from my paper will be free from all appearance of grain, and, if desired, the paper may be rendered additionally transparent by treating the paper negative with wax, oil, or other suitable material in the ordinary manner.

In further indication of the state of the art, I will add that the common wet collodion film has been applied to both sides of glass plates; also that photographic paper has been made from pulp saturated with sensitizing-salts, and that paper sheets have been coated on one side with the gelatino-argentic solution heretofore mentioned; but in none of these cases has the desired perfection of result been attained as by my invention.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. As an improved article of manufacture, a prepared sensitive photographic paper or other flexible support, made as herein described, with two separate sensitive faces of gelatine-silver emulsion, as set forth.

2. In photographic papers, the combination, with the body of the paper A, of the two separate films B of gelatine-silver emulsion, substantially as and for the purpose herein set forth.

3. A photographic sensitive paper, constructed with the body of the paper A inclosed between two sensitive films, B, of gelatine-silver emulsion, substantially as described.

4. In a photographic paper, two separate sensitive films of gelatine-silver emulsion supported and carried upon a single sheet of paper, as herein shown and described.

THOS. C. ROCHE.

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