

UNITED STATES PATENT OFFICE.

JEAN B. GERMEUIL-BONNAUD, OF PARIS, FRANCE.

IMPROVEMENT IN COLORED PHOTOGRAPHIC PICTURES.

Specification forming part of Letters Patent No. **214,752**, dated April 29, 1879; application filed February 6, 1879.

To all whom it may concern:

Be it known that I, JEAN BAPTISTE GERMEUIL-BONNAUD, of Paris, in the Republic of France, have invented a certain Improvement in Colored Photographic Pictures and in the process for obtaining them, of which the following is a full, clear, and exact specification.

The invention relates to the production of colored photographs.

Heretofore in the ordinary way of making colored photographs the colors are applied after the photograph itself is finished.

In this invention the colors are applied to the proof or picture, and an image is subsequently formed thereon by exposure under the prepared negative. The proof is usually twice sensitized and twice exposed under the negative. The first exposure is short, and indicates the general outlines for the application of the colors; the second gives the solid effects or figures and the half-shades. After the application of the colors the paper is albumenized, and the film of albumen deposited protects the colors in the second sensitizing and subsequent operations. This, therefore, is the principle of my new process, by which colored photographs are obtained much superior to those made by known processes. On account of the second exposure after coloring, the colors are better incorporated in the middle of the film on which the image is formed, the picture presents a very great delicacy of appearance, and the half-shades are exceedingly well brought out.

The following is a description of the manner in which my invention is or may be carried into effect: I take, preferably, prepared paper sensitized by a silver bath composed of distilled water, five hundred grams; nitrate of silver, six per cent., thirty grams; glycerine, thirty grams. After remaining therein for two minutes the paper is dried, the proofs are then exposed under the negative for a short time, all the outlines are brought out, and the image is fixed in the ordinary way, and the proof then dried. At this stage of the process the color is applied. It is put on evenly without paying any attention to the half-shades and shadows. Care must be taken to have the colors brighter than they ought otherwise to be. For example, to make a perfect cloud

I employ pure silver yellow, put on very thin. For the rest this precaution ought always to be observed to make the colors light and below tone.

To apply the colors I use the following mixture: distilled water, five hundred grams; gum-arabic, five grams; glycerine, five grams. Ordinary water will suffice, if necessary. The end of the brush is dipped in this mixture and the colors are spread as evenly as possible, the parts to be colored being previously moistened, in order that the application may be more uniform, and to prevent the formation of spots.

All colors may be employed; but it is desirable, as far as possible, to avoid those colors into which white or vermilion, especially the latter, enters.

To give flesh tints, red and yellow ocher with a mixture of lake, according to the complexion of the person photographed, are employed. For taking photographs of fair or ruddy countenances, the yellow ocher is replaced by silver yellow.

The colored proof is dried and then albumenized by plunging it in a bath prepared as follows: The whites of a number of eggs, according to the number of proofs to be treated, are taken, and one gram of sal-ammoniac added for the white of each egg. The mixture is beaten without stopping until it resembles snow. It is now allowed to stand some hours and then filtered through a cloth. It suffices to lay the colored proofs a few seconds in the bath; but in all cases the little bubbles which form on the surface should be removed by a brush kept for that purpose.

The albumenized proofs are dried and sensitized anew in the following silver bath: distilled water, five hundred grams; nitrate of silver, eight per cent., forty grams; glycerine, thirty grams. The proof is then exposed a second time to the light under the prepared negative, and the exposure is maintained until the solid effects are produced and the half-shades perfectly formed. The papers taken out of the press are toned and fixed in the ordinary way. It is only necessary to take care that the bath produces its whole effect upon the red, to the end that the colors applied on the flesh retain their brightness. The photo-

graph is now finished, and nothing remains but to trim it to the proper size and mount it in the ordinary way.

When it is desired to reproduce the same picture a number of times—as a landscape, for example—a more rapid and economical mode of operation is to omit the first exposure under the negative, which serves to give the outlines for the colors, and to use in place thereof a colored impression made mechanically by the ordinary means of chromolithography, the colored proof thus produced being then sensitized to receive the photographic impression, which gives the solid effects, the shadows, and half-shades. The rest of the treatment is substantially as above indicated.

I do not wish to limit myself to the details of the above-described process, as it is evident that substantially the same effect might be produced by altering the proportions of materials used, or the substitution therefor of other equivalent materials, which need not be here specifically mentioned.

Having thus described my said invention, and the manner in which the same is or may be carried into effect, what I claim, and desire to secure by Letters Patent, is as follows:

1. A colored photograph in which the colors applied are covered by and appear through a superposed film, on which latter the solid effects and shades of the picture are produced, substantially as described.

2. The process herein described of forming colored photographs, the same consisting in forming upon a suitable sheet of paper a colored impression, then sensitizing said sheet and exposing the same to light under a negative, substantially as set forth.

3. The process of forming colored photographs, the same consisting in coloring the proof between two successive exposures under the negative, the first of said exposures serving to give the general outlines, and the second producing over the colors the solid effects and half-shades, substantially as described.

4. The process of producing colored photographs, the same consisting in forming an impression or proof of the picture, colored according to the general outlines, and then albumenizing, sensitizing, and printing thereon, substantially as described, whereby the colors only appear through printing on the sensitized film, as set forth.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

J. B. GERMEUIL-BONNAUD.

Witnesses:

ROBT. M. HOOPER,

J. ARMENGAUD, Jeune.