

UNITED STATES PATENT OFFICE.

LOUIS JACQUES HENRI CELLÉRIER, OF PARIS, FRANCE.

PROCESS OF CARBON PHOTOGRAPHY FOR COLORED IMPRESSIONS.

SPECIFICATION forming part of Letters Patent No. 335,893, dated February 9, 1886.

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To all whom it may concern:

Be it known that I, LOUIS JACQUES HENRI CELLÉRIER, chemist and photographer, of Paris, France, have invented a Process of Carbon Photography for Colored Impressions, of which the following is a specification.

The process of carbon photography for colored impressions, which is the object of this invention, not only constitutes an improvement with regard to the chemical agents proper that I propose to employ therein, but also resolves a problem which for many years past has been the aim of numerous investigations, both in the fine arts and in the trade—namely, the obtainment of colored photographic impressions.

My process enables a comparatively greater amount of work to be performed in a given time than could be done by ordinary black photography, and at the same time, without any increased expense, as fine an appearance to be given to the portraits as black photography could possibly impart to the same, by adding thereto a variety of novel shades and colors, and thus making them more closely resemble life.

My process consists of the following three distinct constitutive operations or stages, viz: first, the simple application of colors, without any form, shades, or artistic distribution, either by hand with a brush or by chromo-lithographic impression, upon a sheet of paper prepared by a peculiar process, presently to be described, the only guide in this operation being an ordinary positive photographic plate, from which the object to be reproduced in colors is taken by either transparency or reflection in any well-known manner; second, the formation, quite irrespectively of the operation just described, of the desired image in the shape of a transparent film by a colorless photographic impression, only producing all the soft forms, shades, or half-shades of the object photographed; and, third, the juxtaposition, superposition, or close union of the results of the two foregoing operations.

I shall now more particularly describe the manner in which I carry out each one of the three stages constituting my improved process of photography.

First stage.—I prepare beforehand from the sitter or object to be reproduced an ordinary

positive photographic plate upon either glass or paper. I then arrange in front of such photographic plate, so as to obtain a likeness therefrom by either transparency or the reflection of suitably-arranged mirrors, a sheet of ordinary photographic sensitive paper having undergone a preparatory treatment with either arrow-root, salt, albumen, or cetrarine, &c., and been first moistened. Upon the image thus obtained by transparency or reflection on the said sheet of paper I now apply, with a brush and water or otherwise, aniline or other honey colors, according as they are required by the object photographed, in simple stains, without the least forming or distribution of shades. It will be understood that this operation may be readily effected, since all the operator has to do is to follow the outlines of the transparent or reflected image without any regard to the shades thereof. When all the required colors are thus applied in plain stains, I fix them by means of a bath made of two hundred grams of alcohol at 40° and fifty grams of acetic acid.

It will be understood that when it will be required to obtain for the trade a great number of copies of the same object by my process I may, instead of applying the plain stains of colors by hand upon the sensitive paper prepared as described, employ for the same purpose the usual process of chromolithography.

Second stage.—This operation may be performed simultaneously with the first—that is to say, quite irrespectively of the latter. I take the negative plate which served before for the obtainment of the positive representation employed in the first stage, and I print from such negative plate by means of ordinary photographic frames a positive proof, without argentate, upon a sheet of carbon paper specially prepared for the purposes of my invention, with only half the coloring-matter usually employed for the impression of very hard plates, or only one-third of the usual amount of coloring-matter for light negative plates. Preparatory to this operation the paper should, however, be made sensitive by means of bichromate of potash or of ammonia, used at the rate of, say, four per cent. I then finish the image against a very fine mirror, which I before polish or coat with collodion, and submit to

the action of water heated to 40° or 50° centigrade, and constantly renewed. Such development of the portrait against a mirror of a fine quality, and prepared in the peculiar manner just described, is to enable the portrait or image subsequently to be transferred in the shape of a very thin film over the colored silhouette resulting from the first stage of the process, as described. The mirror, having the image thus developed upon it, is now exposed to the action of a bath composed of about ten parts of purified alcohol and about six parts of water. With a view to assist desiccation, I pour upon the mirror—i. e., the image—a layer of gelatine—say ten per cent.—and leave it till it is completely dry. This layer of gelatine is necessary, because in the operation which will follow in the third stage of my process, and cause the image to adhere closely to the paper prepared in the first stage, it will enable the said image to come off from the mirror, which is merely its transient vehicle, with its slightest half-shades, which without the gelatine would be impossible.

Third stage.—I now apply with a mathematical preciseness the result of the second stage upon the result of the first stage, so that the photograph obtained in the second stage may exactly coincide with the colored silhouette produced by the first stage. The two copies being thus brought into close contact, the fine mirror, having the result of the second stage upon it, is allowed to become perfectly dry. After a few hours I thus obtain a representation of the sitter or object most closely resembling life, with a true and complete variety of colors. The portrait thus produced is truly artistic, its exceeding liveliness and brilliancy resulting more especially from the low percentage of colors used on the carbon

paper in the second stage for the obtainment of the photographic film with the required transparency, form, and shade. The proofs obtained by the operations herein described are then fixed and rendered unchangeable for the trade by means of a bath containing five per cent. of alum. After a slight washing such proofs may readily be applied upon cards and finished in the usual manner.

Having now fully described all parts of my invention and the manner of carrying the same into effect, what I claim is—

The herein-described process of carbon photography for colored impressions, the same consisting of the following steps, to wit: first, in arranging a positive photograph of the object to be produced so that it appears either by transparency or reflection in faint outlines on a sheet of ordinary photographic sensitive paper, and then applying colors thereto in plain or flat stains or tints by hand with a brush or otherwise; second, printing the object (irrespective of the first step) from a negative photographic plate upon a sheet of carbon paper prepared substantially in the manner described, then transferring the object thus produced onto a collodion film, and then applying a layer of gelatine thereto; and, third, in applying the colored copy of the first step upon the gelatine film of the second step, so that the outlines of the two exactly coincide, substantially as described.

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

LOUIS JACQUES HENRI CELLÉRIER.

Witnesses:

DAVID T. S. FULLER,
ALBERT CAHEN.