

UNITED STATES PATENT OFFICE.

FREDERICK J. M. GERLAND, OF BAYONNE, ASSIGNOR TO HIMSELF, AND
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HALF-TONE NEGATIVE FOR PHOTO PROCESSES.

SPECIFICATION forming part of Letters Patent No. 506,109, dated October 3, 1893.

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To all whom it may concern:

Be it known that I, FREDERICK J. M. GERLAND, of Bayonne, in the county of Hudson and State of New Jersey, have invented a new and useful Improvement in Half-Tone Negatives for Photo Processes, of which the following is a full, clear, and exact description.

The invention relates to photo-engraving and printing processes and its object is to provide a new and improved negative which has the film on the sensitive plate so treated by the action of the admitted light as to improve the final result over existing methods, and to produce a half tone negative having the film in the high lights treated by a photographic chemical process to form non-printing spaces which would otherwise have to be cut out of the film by hand or touched or printed out on the ordinary negative.

The invention consists of a half tone negative having the film in the high lights photographically and chemically obliterated to form non-printing spaces in the negative.

In preparing negatives for photo processes as heretofore practiced, the screen was employed in front of the sensitive plate during the time of the exposure so that the negative image of the subject under treatment was formed in dots or lines on the sensitive plate. By this former process no pure, white spaces could be produced in the final prints without injury to the general appearance of the picture, and consequently the prints thus obtained from the finally finished negative, had a flat appearance.

In order to photographically produce a negative having full-tones, half-tones and clear spaces in the high lights, various processes may be employed. I prefer, however, the following process. I divide the full exposure into periods of time, during one of which the sensitive plate is subjected to a full exposure with a screen, and in the other the screen is introduced between the lens and plate. In the first period a sufficient exposure is had so that the high lights from the lighter parts of the object to be reproduced in passing through the lens onto the sensitive film, deaden the latter in places corresponding to the lighter parts of the object; and hence render these places non-sensitive for further deposit of light. In the second period, dots or lines for the relief plate are

produced on the dark parts and half-tones of the subject under treatment, and the semi-tones of the first exposing period are not further disturbed, but remain true according to the subject. As the sensitiveness of the film has been destroyed by the light in the high lights, the said part of the plate is not affected by the screen, and consequently no dots whatever are formed in those places, and consequently the negative contains pure, white spaces, half-tones and all gradations of the copy or subject. After the full exposure is made, the exposed sensitive plate is then developed, fixed and dried in the usual manner to prepare the plate for printing. It is not essential that the screen be used in the second period, and an unobstructed exposure be had in the first period, as this order may be reversed, and the screen used in the first period and an unobstructed exposure made in the second period. By the method described, a negative is produced which has a uniform tone in the high lights, which tone produces a clear or non-printing space in the positive print on the stone, zinc or copper plate so that the finished print shows clear white spaces in the high lights corresponding to the light places on the object photographed. It is well known that this work of removing whites from the stone or plate had, formerly, to be done by the artist with the aid of suitable tools or acids, or the artist touched up the negative.

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

1. As a new article of manufacture, a half tone negative having the film in the high lights of the plate photographically and chemically treated for forming non-printing spaces in the positive, substantially as shown and described.

2. The herein described process of producing half-tone negatives for photo-processes, consisting in subjecting a sensitive plate to a part of the time for a full exposure without a screen, and for the remainder of the time of the full exposure with a screen between the negative and object, substantially as described.

FREDERICK J. M. GERLAND.

Witnesses:

THEO. G. HOSTER,
C. SEDGWICK.