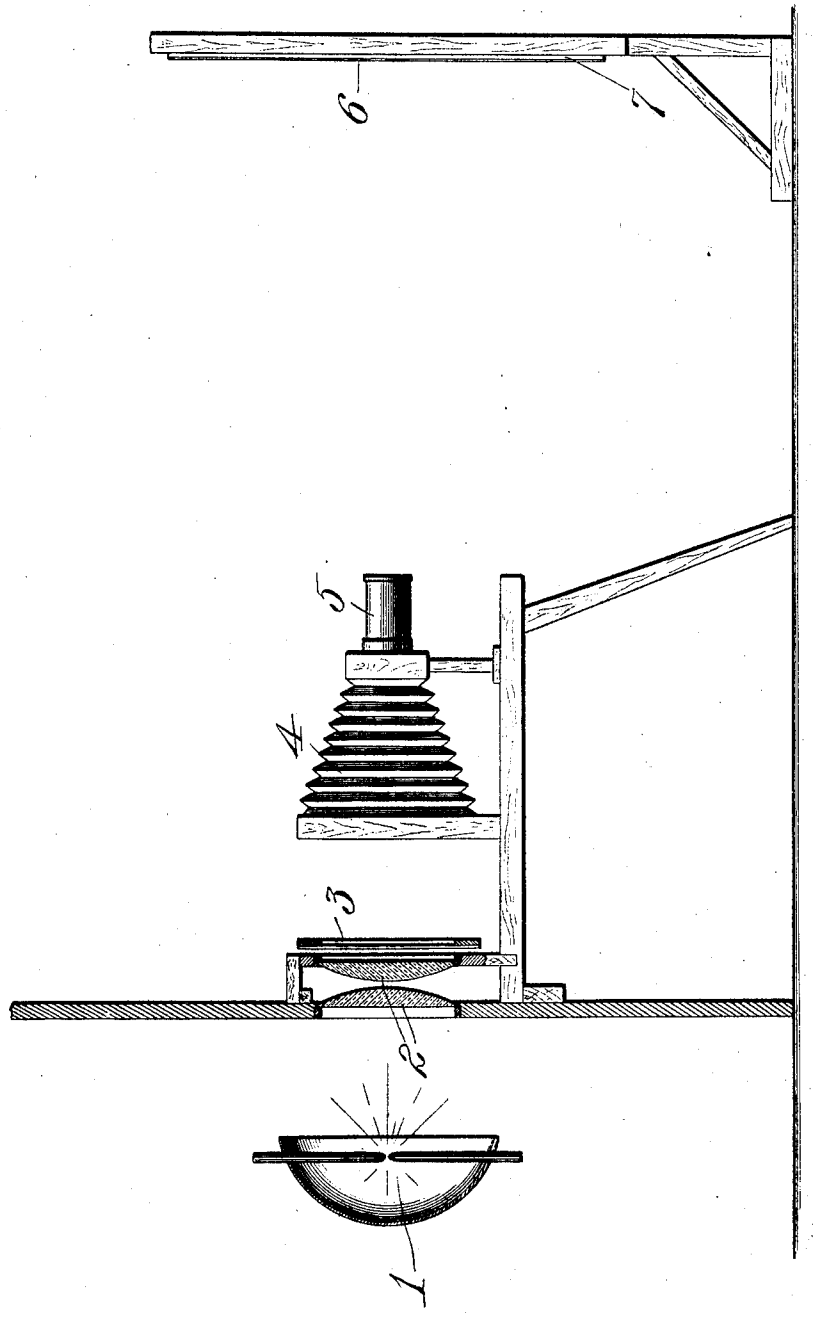
No. 756,753. PATENTED APR. 5, 1904.

F. C. WHIPPEY.

METHOD OF MAKING PRINTING SURFACES.

APPLICATION FILED SEPT. 3, 1903.

NO MODEL.



Witnesses:
Wm. H. Scott.
Ralph Kaiser

Inventor:
Frederick C. Whippey,
by Bakewell & Cornwall
Attys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 756,753. Patented April 5, 1904.

UNITED STATES PATENT OFFICE.

FREDERICK C. WHIPPEY, OF CINCINNATI, OHIO, ASSIGNOR TO THE WHIPPEY PROCESS & ENGRAVING CO., OF CINCINNATI, OHIO, A CORPORATION OF DELAWARE.

METHOD OF MAKING PRINTING-SURFACES.

SPECIFICATION forming part of Letters Patent No. 756,753, dated April 5, 1904.

Application filed September 3, 1903. Serial No. 171,753. (No specimens.)

To all whom it may concern:

Be it known that I, FREDERICK C. WHIPPEY, a citizen of the United States, residing at Cincinnati, Hamilton county, Ohio, have invented a certain new and useful Improvement in Methods of Making Printing-Surfaces, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, forming part of this specification.

This invention relates to a new and useful improvement in the method of making printing-surfaces for the purpose of reproducing drawings or photographs and the like, the object being to simplify the reproduction of drawings or photographs by surface impressions from printing-presses on a larger scale than has heretofore been possible with the method of half-tone reproductions generally practiced.

With this object in view the invention consists in the method hereinafter described and afterward pointed out in the claims.

In order that my invention may be understood, I will describe briefly the method at present in vogue in reproducing photographs or drawings by the half-tone process. The picture to be reproduced is photographed onto a sensitized plate arranged behind a grained, stippled, or lined screen whose opaque portions are located at varying distances apart, depending upon the character of the work to be done and the type of printing-presses on which it will be used. After this "screen-negative," as it might be called, is exposed it is developed and transferred onto the printing-plate, as is well known. The size of the resultant half-tone is determined by the size of the screen-negative, and these limitations cannot be varied by any known process of which I am aware, as the screen-negative is transferred while in actual contact with the printing-plate, so that no variation in the size of the image or picture can be made. During the transferring of the screen-negative onto the printing-plate special apparatus is required involving the use of extremely thick glass capable of withstanding considerable pressure during the transferring process, and this alone imposes limitations on the size of the printing-plate which cannot conveniently be varied from. The method pursued in half-tone reproduction is well known to those skilled in the art, and I will not go into a detailed description of the same here, as I deem it unnecessary, except in so far as I employ certain steps of the old method in practicing the new in the production of enlarged printing-surfaces.

I will now describe my improved method: For purposes of illustration I will assume that the picture to be reproduced is an ordinary photograph—say, for instance, a portrait of cabinet size—to wit, four inches by five inches—although it is obvious that line-drawings, wash-drawings, crayons, pastels, or other pictures may be treated in the same way. The first step is to obtain a negative, and to do this in the case of a photograph I follow the practice well known in ordinary half-tone work—that is, the plate is placed behind the screens and an exposure made so as to obtain the negative. In the instance of a pen-and-ink drawing no screen need be used. This negative is developed in the usual way and dried. After the negative is made I follow the steps usual in enlarging pictures—that is, I prefer to have a constant source of light, which may be rays of light from the sun, but preferably an electric-arc light, where the upper and lower carbons are fed to maintain the arc in one position for some considerable length of time. The rays of light, from whatever source, are preferably passed through condensing-lenses and through the screen-negative, the image being received upon the lens of the camera and transmitted and enlarged upon the transferring-surface.

In the accompanying drawing I have shown such an apparatus, in which 1 is the source of light. 2 represents the condensing-lenses, arranged in an opening in a dark room. 3 is the

screen-plate; 4, the camera-bellows; 5, the lens-holder of the camera, and 6 the transferring-surface upon a suitable plate or support 7. This transferring-surface is a sensitized emulsion painted or spread in a thin coat upon a plate of copper, zinc, aluminium, stone, &c. A proper time is allowed for the exposure, the apparatus of course being adjusted so as to bring the image in sharp definition upon the sensitized transferring-surface, and after the exposure is made the following steps are taken: If the zinc, copper, aluminium, stone, &c., plate is to form a printing-surface from which impressions are to be made, as in half-tone reproductions, the entire surface of the sensitized emulsion is preferably coated with ink. The plate is now developed or washed, the water or developing fluid dissolving or acting upon and removing the unexposed portions of the transferring-surface, leaving the portions which were exposed and acted upon by the actinic rays. The backing-plate 7 is now immersed in an acid or other suitable bath for the purpose of etching the same, after which the plate may be washed off to remove all of the emulsion, whereby the surface of the plate may be printed from or the emulsion may be left on the plate and the printing impression made from the surface of the emulsion.

I have referred to the exposed and unexposed portions of the sensitized transferring-surface 6, and with respect to this I will say that the screen-negative, which is usually a negative composed of opaque dots and squares whose sizes are determined by the number of lines per inch in the screen, they ranging from fifty lines per inch to four hundred and over, will permit the passage of actinic rays only through the transparent portions of the negative, and these in every case alternate with the opaque portions. Thus it will be seen that the transferring-surface 6 is not entirely exposed, as is the case in making ordinary bromid enlargements; but only portions thereof are exposed which render it possible to bring out the image with distinctness and definition usually absent from bromid enlargements. In other words, because of the separation of the transparent spaces the deep shadows and high lights are in greater contrast, which contributes materially to the clearness of the resultant prints.

The sensitized transferring-surface 6 after being treated with a coating of ink and washed, as before described, may be dipped into an acid-bath for the purpose of subjecting the exposed surface of the plate 7 to the etching action of the acids, and the remaining emulsion may be washed off and the printing impressions made direct from the plate 7, or the emulsion may be left on and the printing made from the emulsion. I do not wish to be limited in the practice of my process to either of these, nor, in fact, to the coating of the ink on the emulsion previous to washing the plate, as it is obvious that an enamel emulsion may be used, so that the ink coating may be dispensed with and the printing impressions made direct from the enamel emulsion.

Up to this point I have described my invention as applicable to "half-tone" reproductions, as they are known, in which the backing-plate of the sensitized transferring-emulsion is employed as the printing-surface with or without the emulsion. It will be obvious, however, to those skilled in the art that this transferring-surface 6 can be manipulated in a different manner where it is desired to reproduce a picture by the lithographic process instead of from direct impressions from the backing-plate. This is well known to lithographers; but in order that the practice may be understood I will briefly describe it here. Assuming that the transferring-surface 6 is inked and washed, as before described, it will be necessary to transfer the exposed portions of the plate to stone or other suitable material for lithographing purposes. This is done by first coating the exposed surface with gum-arabic and water, after which the protective coating of ink on the exposed surfaces is washed off, usually by the use of turpentine. The transferring lithographing-ink is now coated over the entire surface, so as to cover the exposed as well as the unexposed surfaces of the plate. Water is now employed to again wash the plate and acting upon the gum-arabic will remove all ink from the unexposed portions of the plate, leaving the transferring-ink on the exposed portions which were formerly covered by the protective ink. A sheet of transfer-paper is now placed over the plate to take an impression, said sheet of paper receiving the transferring-ink which is only on the exposed parts of the plate. This sheet of paper is removed and placed on a lithographing-stone and an impression made therefrom, which deposits the transferring-ink on the stone at such points as were exposed on the original transferring-surface 6. The stone is now treated in the usual way by subjecting its exposed surface to acids, which etch the stone and leave the transferring-ink to form the projections which make the printing-surface.

In the above I have described my improved method as applicable to the production of printing-surfaces of uniform color throughout; but it is obvious that the same will readily adapt itself to the production of colored half-tone reproductions, known as the "three-color" process, where the screens for the different colors possess different characteristics, and a negative is made for the three primary colors—to wit, red, blue, and yellow. The three-color negatives may be enlarged on the sensitized transferring-surface 6, and these surfaces may be employed, as is well understood, in the printing of half-tone reproduc-

tions in colors, they of course necessitating three different impressions, with appropriate colors, to thus produce the desired result.

This application is a continuation of a prior application, Serial No. 62,603, filed by me on or about May 31, 1901.

I am aware that there are operations in the arts of half-tone reproductions, enlargements, and lithography which might be employed to advantage in connection with my improved method; but I have not deemed it necessary here to give a detailed description of those various operations and "auxiliaries," as they might be called, as they will readily suggest themselves to those skilled in those arts.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. The herein-described method of making printing-surfaces consisting in first making a negative with alternating opaque and transparent portions, transmitting rays of light through such negative and a focusing-lens onto a transferring-surface made up of sensitized emulsion, whereby the actinic rays act only upon a portion of such transferring-surface, then dissolving the remaining portion of such transferring-surface; substantially as described.

2. The method of making printing-surfaces consisting in first making a negative composed of alternate transparent and opaque portions, condensing rays of light onto and through said negative and through a photographic lens onto a sensitized transferring-surface, whereby alternate portions of such transferring-surface are exposed and unexposed, dissolving the unexposed portions of the transferring-surface, and finally treating the backing-plate on which the sensitized transferring-surface is coated to an acid-bath for the purpose of etching said backing-plate throughout the unexposed portions of the transferring-surface; substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 31st day of August, 1903.

FREDERICK C. WHIPPEY.

Witnesses:
F. R. CORNWALL,
GEORGE BAKEWELL.