# UNITED STATES PATENT OFFICE.

VINCENS J. M. GOTTLIEB, OF WEST HOBOKEN, NEW JERSEY.

## METHOD OF REPRODUCING DRAWINGS AND OTHER LINE WORKS OF ART.

SPECIFICATION forming part of Letters Patent No. 306,481, dated October 14, 1884.

Application filed February 7, 1884. (No specimens.)

*To all whom it may concern:*

Be it known that I, VINCENS JACOB MARIUS GOTTLIEB, of West Hoboken, in the county of Hudson and State of New Jersey, have invented an Improvement in the Method of Reproducing Drawings and Other Line Works of Art, of which the following is a specification.

I am aware that drawings and other works of art in lines have been reproduced by placing the same in contact with sensitized paper and exposing the same to sunlight, and then developing the copy; but in these operations two difficulties arise: the first is that the lines are left white and the background rendered blue or dark brown, and hence objectionable in appearance and difficult to work from, especially in machine drawings; the second is that nothing but a transparent or nearly transparent original on tracing-cloth or similar material can be employed to print from, and the development is difficult, requiring special apparatus.

My invention is for simplifying the process and for rendering the lines black, or nearly so, while the background is of a light color, and is not liable to become dark by exposure to the light.

The following solution is made use of in preparing the paper, the materials employed being those named, or substances having equivalent chemical properties, and in about the proportions stated: bichromate of potash, 9.6 grams; vanadate of ammonia, 0.015 grams; chloride of sodium, 9.6 grams; sulphuric acid, (about 98°,) 21 grams; distilled water, 441 grams. These substances are to be carefully and thoroughly mixed together. The paper to be sensitized is coated over with this solution, and then allowed to dry for a few minutes in a dark place. The reproduction is effected by exposure to the sunlight. With this object in view, a tracing may be employed, or the drawing or other work of art. If the original is on tracing paper or cloth, or sufficiently transparent, the reproduction may be effected by placing the lined surface next to the glass and the sensitized paper beneath, and pressing the two together from the back, as usual. If the drawing is on translucent paper, it may be placed with the lined surface directly upon the sensitized paper. The reproduction in this case will be reversed. After exposure for the proper length of time to the action of light, varying from ten seconds to fifteen minutes, according to the intensity of the light and the transparency of the original drawing, the impression is removed and developed by steam and aniline oil. To effect this a few drops of aniline-oil are put into the water, or the steam allowed to pass through a cloth upon which the oil is placed. The exposure to the steam and vapor of the aniline-oil may be in a closed vessel or box, or the paper may be passed over the vapors by hand in the open atmosphere, after which the reproduction is dried quickly and will be found to be a durable picture, the lines being black, or nearly so, and the surface or background of a very light greenish tinge.

I have sometimes added ether or aqua-ammonia to the solution before named for varying the color of the lines or the background, or for rendering the surface more or less sensitive than that prepared by the aforesaid formula. The ammonia renders the operation more reliable, so that the lines are not injured if the exposure is unnecessarily long.

I claim as my invention—

The method herein specified of copying drawings and works of art in lines, consisting in covering a sheet of paper with a solution of bichromate of potash, vanadate of ammonia, chloride of sodium, sulphuric acid, and water, exposing the sheet to the action of light while in contact with the article to be copied, and developing and fixing the print by steam and aniline-oil, substantially as set forth.

Signed by me this 4th day of February, A. D. 1884.

V. J. M. GOTTLIEB.

Witnesses:

GEO. T. PINCKNEY,

WILLIAM G. MOTT.