UNITED STATES PATENT OFFICE.

GEORGE MATHIOT, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN ELECTROTYPING.

Specification forming part of Letters Patent No. 7,821, dated December 10, 1850.

To all whom it may concern:

Be it known that I, GEORGE MATHIOT, of the city of Washington, in the District of Columbia, have invented a new and improved process for preventing the adhesion of the deposit to the recipient in the electrotype process; and I do hereby declare that the following is a full and exact description thereof.

It is well known that in copying engraved plates by the electrotype the deposit is apt to adhere so firmly to the original or mold as to resist every attempt to separate them, the engraved plate being thereby destroyed. I prevent this destructive adhesion by making the plate to be copied chemically clean and then expose it to the action of a halogen element or compound; and I further expose the plate so acted on to the action of a strong light for several hours before introducing it into the electrotyping apparatus.

To enable others skilled in the art of electro-metallurgy to practice and use my invention, I will proceed to describe my method of duplicating a copper-plate.

I use a voltaic battery and the usual apparatus for duplicating by the electrotype; but in order to prevent the danger of the adhesion of the deposit to the plate I first make the plate perfectly clean by methods well known, and then silver the surface by any of the methods well known to electro-metallurgists. I then wash the water from the surface with alcohol, and immediately pour over this clean surface of silver a solution of iodine in strong alcohol. I then incline the plate, so that the fluid may quickly drain off, and expose the plate to sunshine or a bright sky for one or more hours. I then introduce it into the precipitating-vat and proceed by the usual methods. When the deposited plate has attained the required thickness, on freeing the original from the envelope the plates will easily separate, the duplicate being an accurate copy of the original, faithfully preserving the most minute markings of polish, &c., and free from the wavy surface, technically called the "curd."

The silvering of the plate and exposure to light is not indispensable; but I prefer to silver the plate, that I may have a new surface for the action of the iodine, and also for the action of light on the iodide of silver, which causes the plates to separate with great ease, though by merely washing the plate with the solution of iodine the destructive adhesion will be prevented.

The ease with which the plates separate depends on the intensity of the light and duration of exposure. When a plate has been merely washed with iodine, or silvered and washed, if placed in a dark place for several hours and then placed in the precipitating-trough it may adhere so as to require some force for separation, but the deposited copper will never be incorporated with the recipient, so as to produce destructive adhesion; but when the plate has been exposed to sunshine so as to become heated there will not be the slightest adhesion.

When the plate to be iodized has a face as great as ten square feet the solution of iodine should not be stronger than one grain of iodine to twenty thousand grains of strong alcohol. When the plate is smaller than above the solution may be somewhat stronger, so that for plates of less face than one square foot the solution may consist of one grain of iodine in seven thousand grains of alcohol. When the plate is first washed with the iodine it may not show it at all, or at most the silver surface acquires a very slight tinge of yellow; but in an hour or more, if exposed to light, it will have acquired a leaden appearance, or appear covered with a fine dust, similar to the bloom on a plum. When the surface is wanted to be very fine this bloom may be swept off with a camel's-hair brush. When this process of iodizing and lighting has been well executed the plate, when examined with a magnifier, presents an iridescent appearance. The same may also be applied by vaporization.

I do not claim to cover the face of the plate with heterogeneous matters—as air, smoke, wax, oil, &c.—for the purpose of preventing adhesion; but

I claim—

1. To form a heterogeneous substance on the surface of the metallic plate by exposing it to the action of iodine, bromine, chlorine, or other chemical capable of forming an insoluble com-

pound with the metal, for the purpose herein set forth.

2. To expose the metallic plate to the action of light after being acted on by a halogen element, substantially for the purpose of preventing the adhesion of the deposit, as specified.

3. The use of iodine in the electrotype process in the manner herein substantially set forth, and for the purpose specified.

GEORGE MATHIOT.

Witnesses:
C. B. Moss,
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