UNITED STATES PATENT OFFICE.

HANNIBAL GOODWIN, OF NEWARK, NEW JERSEY.

PHOTOTYPOGRAPHY.

SPECIFICATION forming part of Letters Patent No. 265,669, dated October 10, 1882.

Application filed November 30, 1881. (No specimens.)

To all whom it may concern:

Be it known that I, HANNIBAL GOODWIN, of Newark, in the county of Essex and State of New Jersey, have invented an Improvement in Phototypography, of which the following is a full, clear, and exact specification.

My invention consists in the employment, as hereinafter more particularly described, of the substance known as "dragon's blood" in the described process or method of preparing by photographic means a metal or stone surface for etching, whereby when a negative is used for producing the photographic impression on the sensitized coating of the plate it may be prepared for relief-etching, and when a positive is so used the plate may be prepared for intaglio-etching, and whereby, at the same time, in either case, a more perfect protecting-substance than is afforded by the light-hardened film of the ordinary process is made to cover, as an etching-ground, the parts not intended to be acted upon by the etching-acid. By the use of dragon's blood I am also able to prepare surfaces for relief-etching when the photographic impression has been produced in the sensitized albumen film through the medium of a positive, and for intaglio-etching when such impression has been produced through the medium of a negative by a shorter, more effective, and economical process than has been heretofore employed.

I will proceed to describe my method.

First. For relief-etching, when a negative has been employed as the medium for getting the photographic impression, after the said impression has been thus produced and the plate has been inked and "developed" in the usual way—namely, by dissolving off by water the unhardened part of the gelatine film—there will remain of course upon the plate only the light-hardened albumen coated with ink corresponding to the image of the negative, all the rest of the surface—that which was covered by the albumen film not hardened by exposure to the light—being bare, that part of the film and its overlying ink having been removed in the developing. Over the plate in this condition I flow a solution of the resinous substance known as "dragon's blood," which, as has been found, possesses this property—namely, it will adhere tenaciously to the naked surface of the plate without said surface having been subjected to any cleansing agent other than the water used in dissolving off the albumen and its overlying ink in the development of the plate; also, that, while it is not soluble in turpentine, turpentine will penetrate a film of it and act upon fatty ink underlying such film. When the film of dragon's blood is dried I apply turpentine to the plate, and by a little rubbing, preferably with a tuft of cotton, remove the ink overlying the hardened film image, together with dragon's-blood film overlying the ink. Then by brief immersion of the plate in a suitable dilute acid—such as muriatic or sulphuric—I remove the light-hardened albumen image, leaving the metal surface under the same bare and the rest of the plate covered with the dragon's-blood film. I now flow the plate with asphalt, which possesses this property, that, while it is not soluble in alcohol, alcohol will penetrate a film of it and act upon dragon's blood underlying it, the dragon's blood being soluble in alcohol. When the asphalt is dried I apply alcohol to the plate, and preferably with a tuft of cotton remove the film of dragon's blood with its overlying asphalt, leaving the part of the surface covered with asphalt which was at first covered with the light-hardened albumen image. The plate is now ready for relief-etching, having been prepared therefor by a process in which a negative has been employed as the medium for getting at the outset the photographic impression upon the sensitized albumen film, and the etching ground being asphalt instead of light-hardened albumen.

Second. For intaglio-etching, when a positive has been employed as the medium for getting the photographic impression on the sensitized albumen-coated plate and the plate has been inked and developed in the usual way, the parts of the albumen film that were not hardened by the light corresponding to the positive image will be removed, laying bare the metallic surface, while the rest of the surface will remain coated with hardened albumen covered with fatty ink. I flow the entire surface of the plate in this condition with dragon's blood. Then when it is dried I apply turpentine, as before described, and remove the ink overlying the hardened albumen with

the dragon's blood overlying the ink. Then with a suitable solvent I remove the said hardened albumen itself, leaving on the surface of the plate only the dragon's blood on the part corresponding to the positive image that was laid bare by the developing of the plate. I then flow the entire surface with a solution of asphalt. When it is dried I apply alcohol and remove the dragon's-blood film and the overlying asphalt, leaving the surface from which the said film has been removed bare, while the rest of the surface is covered with asphalt as an etching-ground. The plate is now ready for intaglio-etching, having been prepared therefor by the process described, in which a positive has been employed as the medium for getting at the outset the photographic impression upon the sensitized albumen film and the etching-ground, as before described, being asphalt instead of light-hardened albumen.

Third. For relief-etching, when a positive has been used as the medium for getting the photographic impression on the albumen film and the plate has been inked and developed in the usual way, the part of the surface corresponding to the positive will be laid bare, while the rest will remain covered by hardened albumen overlaid with fatty ink. I flow the surface in this condition with dragon's blood. Then by the use of turpentine I remove the ink and its overlying dragon's blood, laying bare the hardened albumen, but leaving the positive image covered with dragon's blood. Then with a suitable solvent I remove the hardened albumen, and the plate is now ready for etching, the dragon's-blood film covering the positive image, forming an etching-ground superior to that formed of the hardened albumen.

Fourth. For intaglio-etching, when a negative is used as the medium for getting the photographic impression on the sensitized albumen film and the plate has been inked and developed in the usual way, the part of the surface corresponding to the negative image will remain covered by hardened albumen overlaid with ink, while the rest of the surface will be laid bare. I flow the plate in this condition with dragon's blood, and then, applying turpentine, remove the ink from the hardened-albumen image, together with the overlying dragon's blood. Then by a suitable solvent I remove the hardened albumen, leaving the portion which surrounds the negative image covered with the dragon's blood and constituting the etching-ground. The plate is now ready for etching. In place of the fatty ink mentioned, any analogous fatty substance for the purpose indicated may be employed. In the Letters Patent No. 248,035, issued to me October 11, 1881, for improvement in phototypography, a process is described for preparing plates for etching; but by the process there described plates for relief-etching are prepared only when a positive is used to get the photographic impressions and for intaglio-etching only when a negative is used as the medium for getting the photographic impression on the sensitized plate; and the process there described for so preparing the plates differs essentially from the one herein described for producing similar results, the use of dragon's blood being peculiar to my present process, it enabling me to dispense with the use of the resin and the perchloride of iron, which, as described in said patent, is indispensable to the process there specified. I disclaim here all that is specified in the said patent.

What I claim herein, and desire to secure by Letters Patent, is—

1. In the process of etching with acid on a metal or stone surface photographically impressed for the production of a printing-plate, the employment of dragon's blood, as described, to said photographic impressions, for the purpose specified.

2. In the process of etching with an acid on a metal or stone surface photographically prepared for the production of a printing-plate, flowing the photographically impressed, developed, and inked plate with dragon's blood, then removing the ink and its overlying film of dragon's blood by means of turpentine, and then with a suitable solvent removing the hardened albumen, substantially as described.

Witness my hand November 21, A. D. 1881.

HANNIBAL GOODWIN.

In presence of—

A. G. N. VERMILYA,

J. P. FITCH.