

UNITED STATES PATENT OFFICE.

GEORGE C. BELL, OF NEW YORK, N. Y., ASSIGNOR TO THE BELLTYPE
ENGRAVING COMPANY, (LIMITED,) OF SAME PLACE.

PHOTO-RELIEF ENGRAVING.

SPECIFICATION forming part of Letters Patent No. 226,332, dated April 13, 1880.

Application filed January 5, 1880.

To all whom it may concern:

Be it known that I, GEORGE C. BELL, of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Photo-Relief Engraving; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it.

My invention relates to a process of preparing negatives for photo-relief engraving.

The object is to provide improved means for directly photographing any suitable object without necessity of making a preliminary drawing in wash or line thereof.

To this end the invention consists in a process having the following steps: first, photographing a negative of the object to be engraved; second, printing a positive therefrom on a surface provided with raised dots or points, which latter have their upper portions coated with a sensitizing substance, while the remaining portion of the surface is free from the sensitizing substance; third, photographing a negative from said positive.

To form the raised dots or points on the photographic surface, I form a plate of metal or other suitable substance with a granulated, raised, perforated, or abraded surface of greater or less fineness, according to the character of the engraving to be produced, said roughened or perforated surface being formed by etching, stamping, or in any other desired way, the object being to produce an innumerable number of small raised points or projections, which may be formed on said plate in plain arrangement, or in designs and figures of any kind.

The surface which is to receive the positive print may be hard-surfaced paper or other suitable material. I may apply thereto a wash or coat of any suitable pigment, such as Chinese or flake white, mixed with a solution of albumen; or a wash composed of any material producing the desired result may be used. The washed or coated surface is then permitted to dry. However, I may omit this wash or coat if desired. This plain or prepared surface is

then subjected to pressure in contact with the granulated or perforated side of the plate previously referred to.

Rolls, a press, or other means may be employed to cause said plate to imprint its granulated side in reverse upon said prepared surface. The latter is thereby formed with small depressions corresponding to the projections of the plate, and the remaining portions of said prepared or plain surface are left in relief, thereby constituting a finely granulated or abraded surface.

My next step is to rub over the surface thus prepared a crystal of nitrate of silver, the rubbing being continued until a small quantity of the nitrate of silver is transferred to the relief portions of the surface.

Care is taken to prevent the nitrate of silver from touching the intaglio portions of the surface, and the cameo portions are alone rendered sensitive to the actinic action of light. An ordinary photographic negative of the object to be engraved is then presented to the said prepared photographic surface, and the latter is exposed to light through the said negative in the ordinary manner of exposure for a silver print.

The positive obtained is a fac-simile copy of the object to be represented, but in the form of fine dots resembling mezzotint engraving. This print is then in turn photographed, and a final negative is obtained in the proper state for the ordinary photo-relief process with gelatine and bichromate of ammonia.

It is obvious that according to the foregoing method I may reproduce a photographic fac-simile of portraits, landscapes, architecture, flowers, machinery, and all objects from nature, and also copies of steel and wood engravings, lithographs, drawings in wash, or monochrome paintings, sketches, and similar matter.

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

1. The process of preparing negatives for photo-relief engraving consisting of the following steps: first, photographing a negative of the object to be engraved; second, printing

a positive therefrom on a surface provided with raised dots or points, which latter have their upper portions coated with a sensitizing substance, while the remaining portion of the surface is free from the sensitizing substance; and, third, photographing a negative from such positive, substantially as set forth.

2. The process of preparing photographic surfaces consisting of the following steps:
10 first, coating the surface with a compound or wash; second, forming raised dots or points

thereon; and, third, coating the upper portions only of said raised dots or points with a sensitizing substance, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 13th day of December, 1879.

GEORGE CHARLES BELL.

Witnesses:

HERMAN E. LONG,
GILBERT J. MCGLOIN.