UNITED STATES PATENT OFFICE.

RUDOLF WIDMANN, OF MUNICH, GERMANY.

ETCHING.

SPECIFICATION forming part of Letters Patent No. 682,580, dated September 10, 1901.

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To all whom it may concern:

Be it known that I, RUDOLF WIDMANN, a subject of the King of Bavaria, residing at Munich, Kingdom of Bavaria, Empire of Germany, have invented Improvements in Etching, of which the following is a full, clear, and exact description.

The present invention relates to the art of etching, the purpose of the same being to produce a relief-plate from which to print typographically, which plates shall reproduce a drawing in grain.

According to the present invention it is intended to etch the original designs or drawings directly onto the plate on which they have been executed, thereby obviating the necessity of transferring an original design on the ordinary printing-plate to be etched. This change of procedure permits the artist to use such materials as will enable him to give his ideas and his individuality full expression.

With this object in view my invention consists in covering the smooth surface of any desired etching-plate with resin powder and melting the said powder sufficiently to adhere to the etching-plate and then drawing the design or picture upon the grained plate so produced with a fatty crayon, such as lithographic crayon, and finally exposing the plate to the action of any ordinary or desired etching fluid.

My invention consists, moreover, in such further features as will be hereinafter set forth, and pointed out in the claims.

I will now proceed to describe my invention in detail, so as to enable those skilled in the art to practice the same.

I take a smooth etching-plate, of metal, lithographic stone, or similar material, whose operative surface has been carefully cleaned, and then provide such smooth drawing-surface with a fine grain by dusting or otherwise spreading over the same a resin powder and then melting the same sufficiently to adhere thereto in such a way that a fine grain covers the plate at all portions. While this plate is thus covered with a fine grain, it is to be observed that below the fine grain the said plate is perfectly smooth and free space surrounds each individual grain on all sides, thus leaving the surface of the plate exposed around such grains. The finely-grained plate thus prepared serves as the drawing-surface for the artist, and he executes his design thereupon with a fatty crayon or chalk, such as lithographic crayon, exactly as he would upon ordinary grained paper. Wherever the design is made up of heavy strokes or darker tones or shades, the gaps between the resin-grains are entirely or almost entirely covered by a layer of fatty substance applied. Where finer strokes or lines or light tones are applied, the gaps are only partially covered or obliterated, corresponding to the tone. At those points which have not been touched by the crayon the gaps of course remain in their original condition.

The design having been completed in the above manner, the plate is subjected to the etching agents in the usual manner, the etching agent or liquid attacking only those portions of the surface of the plate which are free from fatty substances, so that where the heavy lines or heavy tones occur the plate will be almost or to a very large degree protected against the etching fluid, while at the more open portions of the picture the etching fluid will attack gaps of a corresponding size, leaving elevated stripples or grains corresponding in size to the degree of tone applied. After the etching process has been completed the resin-grain is removed from the plate in any suitable or known manner, together with the fatty drawing, and the plate is then carefully and thoroughly cleaned by any of the usual solvents which will not attack the plate. After such removal the design will be found accurately etched in relief upon the plate.

It will thus be seen that under my process a relief printing-plate will be produced in which the black portions of the design present a solid unbroken surface, while the remainder of the plate presents a grained surface in half-tone. A plate thus formed may be immediately used for reproduction of the design in the printing or lithographic process, according to the material employed for the plate, such as zinc, stone, &c.

The etching methods employed and the

treatment to produce high lights or deep shadows, as well as the different subsidary manipulations that may be required, may all follow methods that have been hitherto in use.

It is to be noted that this invention is applicable to the preparation of relief-plates for decorative purposes, as well as for the manufacture of relief printing-plates.

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

1. The process which consists in providing the plate to be etched with an acid-resisting grain, then executing a design or inscription thereon with an acid-resisting substance, and then etching the said plate.

2. The process which consists in applying to the plate to be etched an acid-resisting powder, and causing the particles of the same to adhere to the plate, then executing a design or inscription thereon with an acid-resisting substance, and then etching the said plate.

3. The process which consists in dusting over the plate to be etched, a resinous powder and heating the plate sufficiently to cause the particles of the same to adhere thereto, then executing the design or inscription on the plate with a fatty crayon or pencil, and then subjecting the plate to the action of acid.

4. The process which consists in providing the plate to be etched with an acid-resisting grain, then executing a design or inscription thereon with an acid-resisting substance, and then etching the said plate, and finally removing the acid-resist from the plate.

In witness whereof I have hereunto set my hand in presence of two witnesses.

RUDOLF WIDMANN.

Witnesses:
BENJ. NUSBAUM,
EMIL HENZEL.