

# UNITED STATES PATENT OFFICE.

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## PRODUCTION OF SURFACES FOR PRINTING, &c.

SPECIFICATION forming part of Letters Patent No. 274,519, dated March 27, 1883.

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*To all whom it may concern:*

Be it known that I, JOSEPH JULIUS SACHS, a subject of the Empire of Austria, and now residing at The Woodlawn, Sunbury-on-Thames, county of Middlesex, England, have invented certain Improvements in the Production of Surfaces for Printing, Embossing, and other like purposes useful and ornamental, of which the following is a specification.

10 This invention relates to the production of surfaces for printing or embossing and other like purposes.

15 The object of my invention is to produce surfaces which are engraved or etched, or which may, if desired, be raised from the surface of the plate, the design produced being obtained upon the printing-surface by the use of some pattern having in it openings or holes through which the printing-surface is affected.

20 The printing-surface may consist of a roller or a plate; but in this description I will take as an example a roller. The roller I first coat with a varnish or layer of some substance or material which will resist the action of the chemicals in an etching or galvanic bath. 25 When this resisting coating has been placed upon the roller or plate, and has become dry, I place upon it some sticky substance—as, for instance, a solution of some gum, gelatine, starch, or the like—and while this sticky substance is wet I place around the roller the pattern, which may consist of any open fabric or material. When the pattern consists of india-rubber or similar elastic material it can be stretched around the roller, and in such case, 35 if the material of the pattern will resist the bath, it is unnecessary to place any resisting coating upon the roller or plate, as the rubber or like material will cling with sufficient tightness to the roller or plate to prevent the etching solution or the galvanic bath from penetrating beneath the pattern, and will leave only the exposed portions of the roller or plate to be affected by the bath. But, for example, 45 suppose the pattern consists of a piece of lace. This material will not adhere, as will rubber, to the surface of the roller or plate, and consequently it becomes necessary to coat the roller, as first described. The adhesive material 50 placed upon the resisting coating will cause the lace to adhere firmly to the roller. The

edges of the lace forming the pattern are to be adjusted so that the pattern repeats itself perfectly around the roller, a roller of proper size being selected to suit the pattern. 55

I sometimes form a lace pattern in the shape of a tube, which I can slip over the roller, and in this case I frequently apply the adhesive material after the lace pattern has been placed around the roller. It is best to arrange the lace and adjust the meeting edges of the pattern before the sticky or adhesive solution used to cause the pattern to adhere to the roller or plate is dry. It is not necessary, in the case of a pattern formed from lace in the shape of a tube, for example, to make the said tube fit the roller with extreme tightness, for the application of the sticky substance or material causes the lace to slightly contract, so that it will clasp the roller with the proper 70 tightness.

I prefer the wet process just described, though when materials like rubber are used for the pattern the dry process can be employed to advantage. As soon as the adhesive substance is dry and the pattern is firmly held upon the roller the portions of the roller exposed through the interstices of the pattern can be cleaned of the resisting coating. This can be done by hand with an instrument 80 pointed like a chisel, and when the resisting coating is removed or scraped away, and the bare copper or other surface is left, the roller is to be placed in a bath of etching-liquid and slowly revolved therein, the result of which bath will be to eat away the exposed portions of the roller, while such portions as are protected by the resisting coating beneath the pattern will not be affected, and in this way a printing-surface will be obtained. 90

The most expeditious way of removing the resisting coating through the interstices of the pattern is to use the ordinary sand-blast process, provided the pattern is of such a kind as to enable it to resist the attrition of the particles of sand. Hand-tools—such as brushes—may be used with some forms of patterns, and will be found useful in removing the resisting coating through the interstices of the pattern. 95

When the roller is ready for etching, the pattern may be removed from its surface by soaking the roller in a liquid which will dis- 100



5 solve the adhesive material used in causing the pattern to adhere to the roller, and this will obviate the destruction of the pattern, and also enable the operator to rectify any defects before etching.

The etching-bath which I prefer to use consists of a solution of perchloride of iron, about 70° Tralle, which I find is the most suitable, although other baths may be used—for example, nitric acid and the like.

10 When the roller is sufficiently etched it is to be removed from the bath, the resisting coating cleaned off, and the roller will then be ready for printing. To produce the reverse of this effect the roller may be prepared in the above manner, and the portions exposed through the interstices of the pattern may have copper or other metal deposited on them by electro-deposition.

20 When it is desired to produce a rougher surface in the parts of the roller intended to hold the ink or color, I place the roller, after it has been etched, in any electrotype-bath and deposit a thin film of metal over the surface of the roller. The roller is then polished, the rough metal film is thus removed from the outstanding parts, but remains at the bottom of the etched portions, forming a rough surface, which holds color admirably. To produce, for example, say, pin-engraving, I take a mill covered with pin-engraving and run it over the roller or surface before commencing the process, and thus the whole surface is covered

with this engraving. I then proceed as before, and, when finished, I have as result a roller or surface the outstanding parts of which print the pin-engraving, while the sunken parts print a solid pattern, thus giving beautiful effects. This is especially useful for printing oil-colors—as, for instance, for printing on oil-cloth.

What I desire to claim as my invention is—

1. The process herein described of producing printing-surfaces, which process consists in covering the surface of the roller or plate with a resisting coating, placing upon the surface of this roller or plate a pattern which is caused to adhere to the roller or plate by some sticky material or by its own elasticity, then removing the resisting material through the interstices of the pattern, and then forming a printing-surface, substantially as herein described.

2. The process herein described of producing a printing-surface having a ground in imitation of pin-engraving upon the surface of a roller or plate by first covering the entire surface with a series of indentations, next covering the surface with a resisting coating, then placing upon the surface of the coating a pattern, then removing the resisting material through the pattern, and finally forming a printing-surface, as previously described.

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Witnesses:

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