

UNITED STATES PATENT OFFICE.

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MANUFACTURE OF METALLIC PRINTING-SURFACES.

SPECIFICATION forming part of Letters Patent No. 747,791, dated December 22, 1903.

Application filed June 5, 1903. Serial No. 160,192. (No model.)

To all whom it may concern:

Be it known that I, WALTER EDMUND WILLIAM SOUTHWOOD, a subject of the King of England, residing at 30 Craven street, Charing Cross, W. C., London, England, have invented a new and useful Improved Manufacture of Metallic Printing-Surfaces, which is fully set forth in the following specification.

This invention relates to the manufacture of metallic printing-surfaces for printing on textile fabrics, preferably by means of cylinders.

The manner in which printing-cylinders, whether they be of copper, brass, aluminium, zinc, or any other metal, are engraved and prepared will now be described.

The cylinders are first turned perfectly true and then slightly etched in a nitric acid or any other suitable bath, so as to produce a slightly-granulated surface. Instead of granulating the surface by means of an acid-bath the grain may be produced by means of a sand blast or in any other suitable manner. The pattern to be reproduced is transferred to or produced directly on the surface of the cylinder thus prepared in an ink, preferably made of soot and a fatty agent or medium. The surface of the cylinder with the pattern thus produced on it in the above-mentioned fatty ink is submitted to a slight etching in a bath of nitric acid, bicromate of potash, or any other suitable chemical product for the purpose of fixing the pattern. The surface of the cylinder is then inked with any ordinary fatty ink or some other material adapted to resist acid. The cylinder is placed on a core or mandrel and rotated in a bath of acid or other etching liquid. The operation is stopped when the fine lines of the pattern stand out to a sufficient extent, and the cylinder is then withdrawn from the bath. It is then washed with clean water to remove the acid adhering to the surface of the cylinder. The cylinder is then inked again with reserve ink, or preferably a little dragon's blood, bituminous, or equivalent substance is dusted over the pattern. The cylinder is then heated for the purpose of melting the reserve ink or the substance used which had been deposited on the top of each projection of the pattern or on the outer surfaces of said projections. When the substance melts, it flows

down the sides of the projections, thus surrounding and protecting all the details of the pattern. This substance by forming a kind of shield about the details of the pattern prevents during the subsequent engraving operation the acid or other liquid from corroding these portions of the pattern. The engraving operation is accomplished by applying a suitable acid to the face of the plate or by immersing the plate in a bath of a suitable acid. The acid eats away the open portions of the pattern which are not protected by the reserve ink. The plate is then washed with clean water.

The application of reserve ink to the projections, the melting of protecting substances, and the application of acid is repeated several times until sufficient height has been produced.

It has been found in practice to be advisable in certain cases to alter the structure of the portions of the cylindrical surface between the various lines or parts of the pattern—that is to say, the parts corresponding to the blank portions of the pattern after it has been printed—for the purpose of producing a uniform grain, which has the appearance of being made by pin-pricks. This exceedingly fine grain prevents the ink from running during the printing without, however, transmitting the ink to the fabric.

The pattern having been brought into the desired relief by the successive engraving operations described, the grain referred to is now produced. This is accomplished by subjecting the plate before removing the final coat of reserve ink and other protecting substance, if any, employed to the action of a blast of fine sand. The open or blank and depressed portions of the plate are attacked by the sand, and thereby an exceedingly fine grain produced on the plate in said portions. During this graining operation the pattern is protected against the blast by means of the reserve ink and the protecting substances applied thereon and does not receive the grain. The grain having been thus formed in the blank spaces, the reserve ink, together with the other protecting substance or substances used, is removed by washing the plate with turpentine or any other suitable solvent, after which the plate is thoroughly washed in clean

water. It is then ready for the printing of fabrics.

The cylinder thus prepared can be used in any printing-machine.

5 I claim—

1. The process herein described of making a metallic printing-surface, which consists in producing in relief upon a suitable metallic plate the pattern to be printed, and then
10 graining the depressed portions of the plate, substantially as set forth.

2. The process herein described of making a metallic printing-surface, which consists in granulating the surface of a suitable metallic
15 plate, producing thereon the design in a fatty ink, subjecting the plate to the action of a fixing-bath, inking the surface of the pattern

thus produced with a fatty ink, etching the plate, washing the same with clean water, inking the pattern with a reserve ink, heat- 20 ing the plate, etching the same, washing it with clean water, reinking the pattern with reserve ink, subjecting the plate to the action of a blast of sand, and then removing the reserve ink from the pattern, substantially as 25 set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

WALTER EDMUND WILLIAM SOUTHWOOD.

Witnesses:

R. WESTACOTT,
ALFRED NUTTING.