UNITED STATES PATENT OFFICE.

FREDERICK BECK, OF NEW YORK, N. Y.

PROCESS OF MAKING PRINTING ROLLERS OR BLOCKS.

SPECIFICATION forming part of Letters Patent No. 332,377, dated December 15, 1885.

Application filed January 28, 1885. Serial No. 154,495. (No specimens.)

To all whom it may concern:

Be it known that I, FREDERICK BECK, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in the Manufacture of Printing Rollers or Blocks, of which the following is a specification.

My invention relates to an improvement in processes for making printing blocks and rollers used for printing cloths, oil-cloths, wall-papers, and other like manufactures. Such rollers and blocks have been heretofore made with the design raised in relief on the face of the roller or block, it being either carved in relief on the roller or block, or the desired relief being outlined with pieces or strips of brass or copper set edgewise into the body of the roller or block and projecting above its surface, one strip on each side of the relief, then an impression being taken from the upper edges of the pieces of copper or brass, pieces of wood or felt of the sizes and shapes indicated by the impression are cut out to conform to the spaces between or inclosed by the strips, which are then carefully and accurately cemented into the said inclosed spaces surrounded by the copper or brass strips. The metallic strips are used to laterally sustain and hold in place the wood, felt, or other material, and to protect them from injury under the action of the press. This, as will be seen, is an exceedingly laborious and expensive method of constructing such devices, and my invention relates to an improved method by which they may be made.

I apply the metallic strengthening or side-sustaining strips by electro-deposition, and thus secure great simplicity and economy in the manufacture of the rollers and blocks, and also additional advantages, some of which will be herein stated. I first make the roller or block upon which the relief is to be formed, which I will hereinafter call the "base," out of wood, metal, or other suitable material. I then coat the same with a layer of papier-maché, rubber, wood, felt, the substance known as "lincrusta"—*i. e.*, oxidized oil and wood pulp, flock, or other substance suitable for receiving and transmitting the color to the fabric being printed. This coating or layer I cause to adhere to the base by any suitable means. The coating or layer may have a thickness of, say, an eighth of an inch, although it may be more or less, as desired, and upon it I trace or otherwise produce the design which I desire to print from it, and I then cut out from this coating, with a sharp knife or other suitable instrument, the design which I have traced or otherwise produced on the layer, thus projecting the design in relief; and I so cut out the relief as to let the lateral walls thereof slant somewhat from the face or color-receiving outward surface of the relief down to the base, so that when the metal is deposited on the base and on the relief, as hereinafter set forth, this slanting of the sides of the relief will have a dovetailing effect, which will hold the papier-maché, lincrusta, felt, wood, rubber, or other material firmly in its place down upon the base, so that it cannot work out from between the metallic walls, hereinafter explained, or be pulled out therefrom by reason of any adhesion between its printing-face and the material being printed. After the design has been cut out all around the base, as stated, or while said operation is being performed, if desired, I remove all of the material—*i. e.*, the papier-maché, lincrusta, felt, wood, rubber, or other like substance—except that which is to compose the relief. This should be done thoroughly and clean quite down to the surface of the base. I then coat the exposed surface of the base and the inclined sides and the face of the relief with plumbago or other substance having the capacity to recive metals by electro-deposition, and when thoroughly coated with the plumbago I submerge the entire base and the design upon it in the solution of any suitable apparatus for electrically depositing metals, and, the usual circuit-connections having been made, I deposit upon the base and upon the walls and outer surface of the relief a coating of any suitable metal until it attains a sufficient thickness and strength to sustain and hold the papier-maché, lincrusta, felt, wood, rubber, or other material. After sufficient metal has been deposited, as above stated, I remove the base from the solution and grind off or otherwise remove the metal which has been deposited upon the outer or

color-applying surface of the relief, and continue the grinding until all the metal has been removed from its outer surface, thus exposing a perfectly smooth and flush face from which to print. The edges of the deposited metal will then be flush with the surface of the papier-maché, lincrusta, wood, felt, rubber, or other material, and there will be a continuous unbroken sheet or coating of metal extending over the entire surface of the base and up both sides of every projecting surface of the relief. Thus the relief will be sustained laterally while in use, and because of the dovetailing or inclination of its walls the metal will hold it down firmly upon the base.

In order to prevent any tendency in the metal to slip on the base, if it be of wood or other material to which the metal will not firmly adhere, small pins may be driven through the metal here and there into the base in the recesses between the elevations of the relief, or it may be otherwise secured.

Instead of coating the printing-face of the relief with plumbago, as well as its sides, and thus depositing metal on the printing-face, as well as on the sides of the relief, I sometimes omit the plumbago from the printing-face or after it has been applied thereto I prevent deposition of metal thereon by covering the same with varnish or other suitable resistant, which will prevent the metal from being deposited on such face. Thus the subsequent grinding down to a surface from which to print will be more easily and rapidly done; also, in order that the base may be entirely protected by the metal deposited upon it, and thus suffer no injury by reason of the ink coming in contact with it, which frequently causes wooden bases to split, I apply the plumbago also to the ends or edges of the base, as the case may be. Thus the metal will be deposited on them, as well as on the other parts of the base and on the relief, and the entire surface of the device will be incased in the metal and protected by it.

Bases which are used for printing carpets, certain woolen goods, and the like manufactures, are made with the design sunken into the face thereof, not in relief. Such bases are also made by me, the above process being simply reversed—*i. e.*, the design is cut out and removed from the layer or coating above described, so that it is sunken therein, instead of being left in relief thereon.

My invention, as stated, is applicable to the manufacture of flat plates or blocks as well as to rollers, and the word "base" in the claims I intend shall cover either the roller or the block.

I do not abandon, although I do not in this patent claim, the printing rollers or blocks herein described, nor the process for making the same herein described, having a base coated with a layer of papier-maché, lincrusta, wood, felt, rubber, or like material from which the desired design is cut out in relief, which said base and relief are then protected by a deposit of metal on the base, and on all parts of the relief, including its printing-surface, because I intend hereafter to apply for a patent therefor in a separate application.

Having thus described my invention, I claim—

1. The described process of making printing rollers or blocks, consisting in coating the base with a layer of papier-maché, lincrusta, wood, felt, rubber, or the like material, then cutting out the desired design therefrom in relief, then depositing metal by electro-deposition on the base and on the relief, then removing the metal from the printing-surface of the relief, substantially as and for the purposes set forth.

2. The described process of making printing rollers or blocks, consisting in coating the base with a layer of papier-maché, lincrusta, wood, felt, rubber, or like material, then cutting out the desired design in relief, the relief being broader at its junction with the base than at its printing-surface, depositing metal by electro-deposition on the base and on the relief, then removing the metal from the printing-surface of the relief, substantially as and for the purposes set forth.

Signed at New York, in the county of New York and State of New York, this 30th day of December, A. D. 1884.

FR. BECK.

Witnesses:
BERNARD KELLY,
SHERWOOD W. CONNELL.