

Dec. 5, 1933.

N. BECHAK

1,938,313

METHOD OF ENGRAVING PRINTING CYLINDERS

Filed Jan. 25, 1933

FIG. 1



FIG. 2

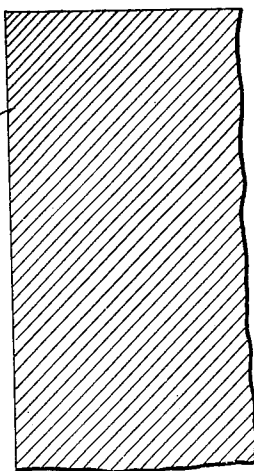


FIG. 3

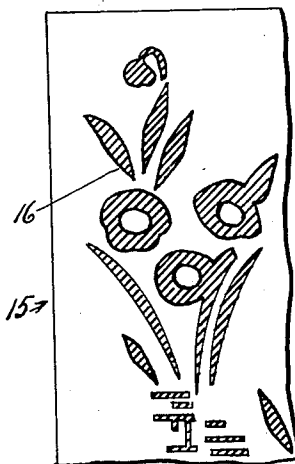


FIG. 4

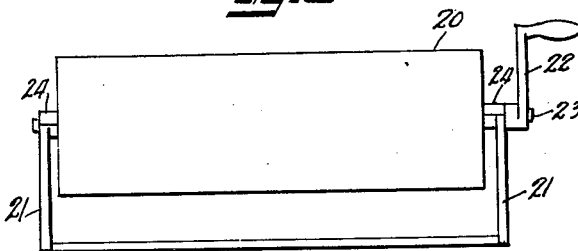


FIG. 5

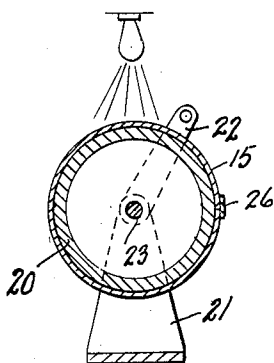
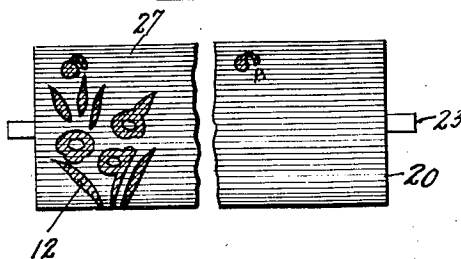


FIG. 6



INVENTOR
Nurses Bechak
BY
Maurice Bloch
ATTORNEY

UNITED STATES PATENT OFFICE

1,938,313

METHOD OF ENGRAVING PRINTING CYLINDERS

Nerses Bechak, North Bergen, N. J.

Application January 25, 1933. Serial No. 653,413

3 Claims. (Cl. 95—5.7)

This invention relates to the art of producing intaglio etched metal rollers especially adapted for the printing of textile fabrics.

One of the objects of the invention is to produce such rollers without the use of transfers now commonly used in the preparation or production of such printing rolls.

Another object of the invention is to provide a method by which the design to be printed is printed directly upon the printing cylinder and then etched.

Other objects and novel features of my invention will become more apparent as the specification proceeds.

In the drawing, forming a part of this application and in which similar reference characters refer to similar parts throughout the several views:—

Figure 1 is a fragmental view of an artist's design to be reproduced on the printing roller.

Figure 2 is a similar view of a ground line screen used in carrying out my process.

Figure 3 is a fragmental view of the photographic positive film.

Figure 4 is a view in side elevation showing the roller mounted for rotation.

Figure 5 is a cross sectional view of the roller with the film held thereon and subjected to the action of light to photographically print the design upon the roller, and

Figure 6 is a fragmental view of the etched roller.

In carrying out my invention, I first draw the design to be etched, upon a sheet 10, coloring the ground 11 black and leaving the design 12 white. I then place a ground line screen 14 over the drawing on sheet 10 and photograph same upon a flexible transparent film 15 and obtain a positive 16. This positive is later printed upon the printing roller.

The roller 20 which is to receive the image of the design is chemically cleaned, and washed, and then coated with an acid resist sensitizing solution having a shellac base. In order that a uniform sensitized surface be formed about the cylinder or roller 20 the same is supported in a supporting frame 21 and rotated therein by means of a handle 22 secured to a shaft 23 passing through the roller and journaled in bearings 24 in the frame 21. The rotation of the roller is preferably carried out in a heated area so that the coating dries quickly. It is to be understood that the rotation of the roller causes all surplus solution to drip off and form an even sensitized

coating all over the circumference of the said roller.

After the roller 20 has thus been prepared, the film 15, which is made to exactly fit the circumference of the roller is tightly wrapped therearound and the abutting edges are brought together and secured to each other by means (for instance) of a transparent strip of adhesive matter 26. The roller is then again placed in the frame 21 in the direct path of the rays of an electric light and rotated for about ten to fifteen minutes or until the design has been printed thereon.

After the printing is finished, the film is removed from the roller and the said roller is then developed in a developing solution which contains a liquid dyeing or coloring ingredient. During the developing process the protected parts of the sensitized film, or the portions thereof covered by the opaque lines of the film positive, will peel off the cylinder and expose the natural metallic surface of the roller, all of the other parts of the roller remaining covered by an acid resist colored film. The coloring matter is used to more easily determine when the cylinder is fully developed.

After the roller is fully developed it is removed from the bath and subjected to a stream of running water for cleaning same. If any portion thereof is not thoroughly cleaned it is lightly rubbed over with a piece of wet cotton, after which it may be subjected to a heat treatment for thoroughly drying same. Any imperfections left on the roller are then touched up with liquid asphaltum. The roller is then immersed into an etching tub and rotated therein until the design is fully etched.

In Figure 6 I have shown the roller 20 after it has been removed from the etching solution, showing the design 12 thereon and the colored film 27 over the rest of the surface of the roller. This colored film is removed with a brush by brushing the surface of the roller with an alcoholic and potash solution. This solution dissolves the resist on the unprotected part of the roller and leaves same with its natural metallic copper surface. The roller is now ready for use in printing.

From the foregoing it will be seen that I have provided a printing roller for printing textile fabrics by printing the design directly upon the surface of the roller without the use of any carbon tissue transfers or other media, and then etching same.

Having described my invention, what I claim

as new and desire to secure by Letters Patent is:

1. The method of engraving the cylindrical surfaces of metal rollers which consists in covering the cylindrical surface while in a supporting frame with a sensitized acid resisting solution having a shellac base, attaching thereto a flexible transparent positive film of the exact size of the circumference of the roller, the said film having a copy of the design thereon securing the abutting edges of the film by means of a transparent strip of adhesive material, printing the design directly on the sensitized cylindrical surface of the roller, developing same in a developing bath having a coloring ingredient therein to remove the coating film unacted upon by the light, and coloring the coating film acted upon by the light, thereby forming a colored resist surface upon the roller, and then etching the exposed parts of the surface by the action of an etching solution.

2. The method of engraving the cylindrical surfaces of metal rollers which consists in covering the cylindrical surface while in a supporting frame with a sensitized acid resisting solution having a shellac base, rotating the said roller on the said frame in a heated area, attaching thereto a flexible transparent positive film of the exact size of the circumference of the roller, the said film having a copy of the design thereon, the said positive having ground lines running through the design only, securing the abutting

edges of the film by means of a transparent strip of adhesive material, printing the design directly on the sensitized cylindrical surface of the roller, developing same in a developing bath having a coloring ingredient therein to remove the coating film unacted upon by the light, and coloring the coating film acted upon by the light, thereby forming a colored resist surface upon the roller, and then etching the exposed parts of the surface by the action of an etching solution.

3. The method of engraving the cylindrical surfaces of metal rollers which consists in covering the cylindrical surface while in a supporting frame with a sensitized acid resist solution having a shellac base, rotating the said roller on the said frame in a heated area, attaching thereto a flexible transparent positive film of the exact size of the circumference of the roller, the said film having a copy of the design thereon, the said positive having ground lines running through the design only, printing the design directly on the sensitized cylindrical surface of the roller, developing same in a developing bath having a coloring ingredient therein to remove the coating film unacted upon by the light, and coloring the coating film acted upon by the light, thereby forming a colored resist surface upon the roller, then etching the exposed parts of the surface by the action of an etching solution, and finally removing the colored coating film.

NERSES BECHAK.

35

110

40

115

45

120

50

125

55

130

60

135

65

140

70

145

75

150