

H. A. METZ.  
APPARATUS FOR DYEING.

Patented Dec. 15, 1896.

Fig. 4.

$e^1$

$C$

$h$

$D^2$

$H$

**WITNESSES:**

*S. Petri-Palmebo.*  
*Chlart.*

Fig. 5.

Diagram illustrating a perspective view of a key. The key features a long shaft with two circular features labeled *e* and *c*. The bit of the key is labeled *D*, and the side parts are labeled *H* and *h*.

INVENTOR

INVENTOR  
Herman A. Metz

BY

BY *James R. Adams*

ATTORNEYS.



# UNITED STATES PATENT OFFICE.

HERMAN A. METZ, OF BROOKLYN, NEW YORK.

## APPARATUS FOR DYEING.

SPECIFICATION forming part of Letters Patent No. 573,229, dated December 15, 1896.

Application filed June 26, 1896. Serial No. 596,999. (No model.)

*To all whom it may concern:*

Be it known that I, HERMAN A. METZ, a citizen of the United States, residing in Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Machines for Dyeing Cotton and other Fabrics, of which the following is a specification.

This invention has reference to an improved machine for dyeing cotton and other fabrics, and relates more especially to an improved application of the azo-color bases, either singly or in a mixture of bases upon grounded material, for either plain, resisted, or discharged patterns, in such a manner that the quantity of the base transmitted to the fabric, the time of contact of the same with the transfer-roller, and the tension by which the fabric is passed over the transfer-roller can be regulated; and the invention consists of a machine for dyeing cotton or other fabrics by means of azo-color bases, which comprises a trough for the base or a mixture of various bases, a padded or clothed transfer-roller rotating in said trough, and tension-rollers supported in upright holders that are suitably mounted at the lower ends and provided with means for adjusting the tension-rollers higher or lower on the same or for raising or lowering the tension-rollers relatively to the transfer-roller, as will be fully described herein-after and finally pointed out in the claims.

In the accompanying drawings, Figure 1 represents a side elevation of my improved machine for dyeing textile fabrics with azo-color bases. Fig. 2 is a front elevation of the same. Fig. 3 is a modified form of the device for adjusting the holders of the tension-rollers; and Figs. 4 and 5 are detail side and end views, respectively, of another modified form of adjustment for the shoulders.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents a padded transfer-roller the shaft A' of which is supported in suitable bearings of a color-trough B or on separate straddles. The padded roller A is rotated in the color-trough B by a belt-and-pulley transmission, so that the same continually takes up a quantity of the azo-color base or a combination of bases contained in the trough. At each side of the

padded roller A is arranged a tension-roller D, by which the cloth is pressed thereonto, the shafts of the rollers being supported in longitudinally-slotted holders C C, which are pivoted at their lower ends to lugs E. The tension-rollers D are supported at any desired height in the slotted holders by means of shiftable pins e, which are passed through a number of transverse holes e' in the holders.

The relative position of the tension-rollers D D toward the padded roller A is adjusted by means of a connecting-rod F, which is pivoted to the upper end of one holder C at f' and passed through a swiveled sleeve f at the upper end of the other holder C, as shown clearly in Fig. 1, the connecting-rod F being adjusted in said sleeve by means of a set-screw f<sup>0</sup>. The holders, connecting-rod, and allied parts are duplicated at each end of the machine. By the adjusting-rods F the holders can be set at any suitable angle toward each other, so that the tension-rollers are moved closer to or farther away from the padded roller, whereby the tension on the cloth to be printed is adjusted, and not only is the tension of the cloth regulated, but also the amount of contact of the cloth with the padded roller regulated. By raising or lowering the rollers D D the time of contact of the cloth is also regulated, so that the quantity of the color-base transmitted to the fabric can be fully controlled by the operator and adapted to the quantity of color to be supplied, or whether it is to be applied to grounded material or to plain or resisted or to discharged patterns, as the case may be.

The holders C can be pivoted in any suitable manner at their lower ends to the bed-plate of the machine, and if it be desired to steady the same they can each be guided on a semicircular guide-strap G, (see Fig. 3,) against which the lower part of the holder is clamped by a suitable set-screw g, whereby a greater steadiness is imparted to the holders and the lateral vibration of the same prevented, which will generally take place under the influence of the rotary motion of the transfer-roller A.

In place of pivoting the holders at the lower ends the same may each be provided with a yoke D', guided on a stationary T-bar H, one of which is arranged at each side of the color-



trough and to which the lower end of the holder is clamped by clamping-screws *h* at each side of the bar, as shown clearly in Figs. 4 and 5. In this case the holders are held in vertical position and moved toward or away from the transfer-roller, so as to apply the tension-rollers in various positions to the same.

I prefer the construction shown in Fig. 3, as thereby the tension-rollers can be adjusted in greater variety of positions relatively to the transfer-roller, so as to regulate in a more effective manner the length of cloth in contact with the transfer-roller, next the time of contact of the cloth with the same, and finally the tension of the cloth by the adjustment of the holders at different angles to the transfer-roller.

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

1. A machine for dyeing cotton or other fabrics, which consists in a transfer-roller, a color-trough in which the same is rotated, a tension-roller at each side of said transfer-roller, independent holders for said rollers, arranged one at each side of the transfer-roller, said holders being constructed and provided with means for the separate and vertical adjustment of the tension-rollers, and means for adjusting the said holders and tension-rollers toward or from the transfer-roller, substantially as set forth.

2. A machine for dyeing cotton or other fabrics, which consists of a transfer-roller, a

color-trough in which the same is rotated, a tension-roller at each side of said transfer-roller, slotted holders for supporting said tension-rollers at various heights, and means for adjusting said holders and tension-rollers in various relative positions toward the transfer-roller, substantially as set forth.

3. A machine for dyeing cotton or other fabrics, which comprises a transfer-roller, a color-trough in which said roller is rotated, slotted holders pivoted at their lower ends, means for adjustably connecting the upper ends of said holders, tension-rollers, the shafts of which are supported in said slotted holders, and means for supporting said shafts at a higher or lower position in said holders, substantially as set forth.

4. A machine for dyeing cotton or other fabrics, which comprises a transfer-roller, a color-trough in which said roller is rotated, slotted holders pivoted at their lower ends, a connecting-rod applied to one holder and connected adjustably to the upper end of the other holder, tension-rollers, the shafts of which are guided in the slots of said holders, and means for adjusting said tension-rollers higher or lower in said holders, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

HERMAN A. METZ.

Witnesses:

PAUL GOEPEL,  
G. W. JAEKEL.