S. M. & C. T. SMITH.

DYEING APPARATUS.

No. 169,859. Patented Nov. 9, 1875.

FIG 1

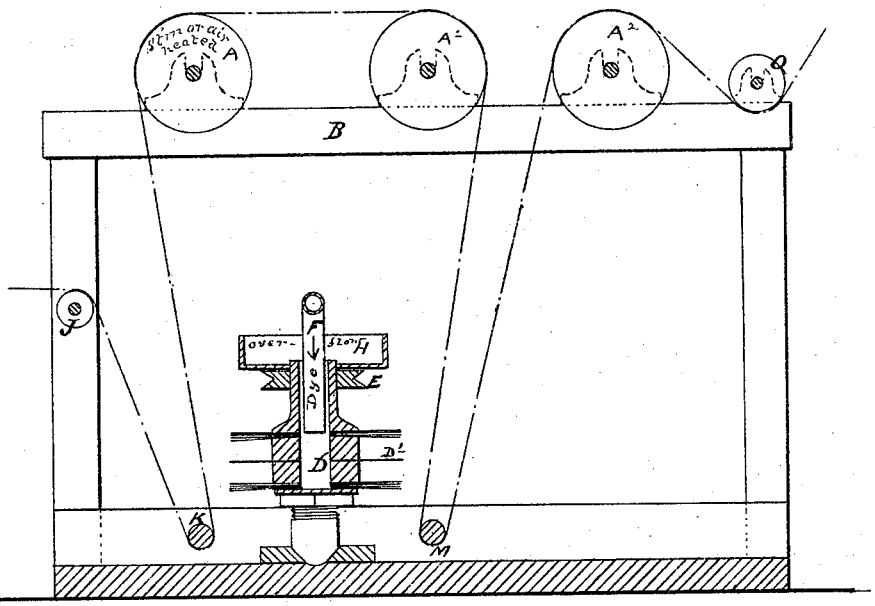
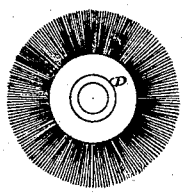
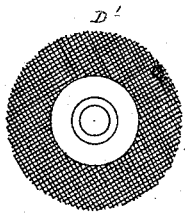


FIG 2





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UNITED STATES PATENT OFFICE.

SAMUEL M. SMITH AND CHARLES T. SMITH, OF BRADFORD, ENGLAND.

IMPROVEMENT IN DYEING APPARATUS.

Specification forming part of Letters Patent No. **169,859**, dated November 9, 1875; application filed July 31, 1875.

To all whom it may concern:

Be it known that we, SAMUEL MILNE SMITH and CHARLES TELFORD SMITH, of Horton Dye Works, Bradford, in the county of York and Kingdom of England, have invented certain new and useful Improvements in an Apparatus for Dyeing or Printing Textile or other Fabrics, Warps, or Yarns; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings.

The more especial object of this invention is to produce by means of dye-liquor what is technically called or known as "melangeing" or partial dyeing, or producing a spotted or speckled effect on fabrics or yarns, instead of printing the same, as has been generally the case heretofore; but we may also produce by this apparatus solid or fully dyed effects upon such fabrics or yarns.

The invention consists in causing the dye-liquor to pass through perforations by the centrifugal force of a rotary hollow cylinder or disk upon or against the fabrics or yarns in such manner and position that they will receive the liquor in spray and be sprinkled thereby.

In order that the spray may be more finely formed or divided, we have bristles or fibers interspersed with or between the perforations, and we also employ a series of steam or hot-air cylinders suitably arranged for the fabrics or yarns to pass in contact with immediately after they have been thus sprinkled so as to fix the color and dry the fabric at the same time.

The manner in which this invention is to be performed or reduced to practice will be readily understood by reference to the accompanying sheet of drawings, where—

Figure 1 represents, in outline, a series of ordinary steam or hot-air cylinders, A, arranged on frame-work B suitably for our purpose; also, a series of friction-rollers for conducting the fabrics or yarns in contact with the cylinders. D is the rotary hollow cylinder or disk, supported on foot-step and top bearing, motion being given to it at suitable speed by a whirl or small pulley, E, fixed thereon, driven by band or belt from any convenient rotary shaft. This cylinder or disk is shown in plan view at Fig. 2. It will be seen to be hollow, perforated, and interspersed with bristles or fibers projecting from its sides. A pipe, F, is inserted in at the top of the hollow for conducting dye-liquor from a cistern or vessel placed in suitable position to allow it to gravitate or flow into the cylinder or disk, the supply being regulated by a tap, and a small cistern, H, is formed on the top bearing of the said cylinder or disk to catch any overflow of liquor.

It will now be observed that if a fabric or yarn suitably spread out is passed from the roller J under the conducting-roller K to and over the cylinders A A^1, thence forward and under another roller, M, to and over the next cylinder, A^2, and under the roller Q, from which it passes to a pair of drawing-rollers, which draw it forward at a regular speed, and that when motion is given to the apparatus the dye-liquor will be forced out through the perforations by the rotation or centrifugal force of the cylinder D and thrown against the fabric or yarn while passing the bristles and wire-gauze D′, dividing it into fine spray, by which the fabric will be spotted or speckled, and, as it passes over the cylinders it will be dried and the color fixed.

It will also be observed that we have only named one rotary hollow cylinder; but it will be evident we may use two or more of such cylinders or disks in the breadth of the fabric, and that we may employ more or less a number of the drying-cylinders, according to circumstances; also, that instead of having the pipe to supply the liquor inserted into the hollow cylinder, the end of the pipe may be directed on the outside of the cylinder, among the bristles, if desirable.

We claim—

1. In an apparatus for dyeing fabrics, yarns, &c., the hollow perforated cylinder D, in combination with the surrounding wire-cloth D′ and a series of bristles, operated substantially as and for the purposes described.

2. The cylinder D, constructed substantially as specified, in combination with a series of

feed and conducting rollers, J K M Q, and the steam or hot-air heated rollers A A^1 A^2, all arranged and operating as and for the purposes set forth.

3. The cylinder D, constructed and operating as described, in combination with the cistern or receptacle H and a feed-pipe, when arranged to operate substantially as and for the purposes set forth.

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