

United States Patent Office.

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OF ROCHESTER, NEW YORK.

Letters Patent No. 62,612, dated March 5, 1867.

IMPROVED METHOD OF BLEACHING AND DYEING YARNS, CLOTHS, AND OTHER TEXTILE FABRICS.

The Schedule referred to in these Letters Patent and making part of the same.

Be it known that we, ISAAC C. COLTON, of the city of Buffalo, and ALBERT M. HASTINGS, of the city of Rochester, in the State of New York, have invented a new and improved Method of Bleaching and Dyeing Cloths, Yarns, and other Textile Fabrics; and we hereby declare that the following is a full and exact description thereof.

Our invention consists in subjecting the fabrics or materials to be bleached or dyed to the action of the bleaching or dyeing liquors or solutions, by the use of hydraulic or hydro-dynamic and pneumatic pressure in manner following: We employ a closed tub or cylinder, with a suitable "man-hole," or aperture in the surface, through which to put the cloths or fabrics to be operated upon, with a cover suitably arranged for screwing or fastening on; so as to prevent the escape of air and of the bleaching or dyeing liquors. The cloths or fabrics are inserted into the tub, vessel, or cylinder, and the cover properly secured. We then employ a force-pump working with a pipe or hose inserted into the vessel or cylinder through a hollow journal, and thereby force, by hydraulic or hydro-dynamic pressure, a sufficient quantity of the bleaching or dyeing liquors into the vessel or cylinder to fill the same, and by the application of sufficient force or pressure suddenly force the bleaching or dyeing liquors into and through every minute pore and fibre of the cloths or fabrics. By this means the bleaching or dyeing is thoroughly accomplished in a few hours, and without endangering the strength of the fibre by long-continued action of the liquors, which often happens by following the ordinary modes. If the vessel or cylinder is stationary, suitable means should be employed for an internal agitation of the contents, so that the result may be speedily accomplished and every part be operated upon equally and effectually. This can be done by a wheel or dashers fastened to a shaft and worked from the outside. Preferably a rotating or revolving cylinder should be used, with brackets, pins, or arms fastened at intervals to the interior sides thereof, and projecting towards the centre, so that, as the cylinder revolves, the cloths and fabrics as well as the dyeing and bleaching liquors will be constantly moved and agitated. This internal movement and agitation is essential to the proper working of the process. Beneath or under the vessel or cylinder, a vat or tub is placed to receive the liquors and the cloths or fabrics when the man-hole cover is removed. The liquors can be pumped out, strengthened, and used repeatedly. Whatsoever air may be in the cylinder will be compressed by the action of the force-pump while injecting the fluids, thus producing a combined action of pneumatic and hydraulic or hydro-dynamic pressure. By this process the most delicate fabrics will be uninjured, from the forces used acting equally and uniformly on all the parts thereof. In the ordinary processes of bleaching, acids are required to destroy the affinity existing between the chlorine and the lime, and to release the chlorine gas. By the process above described, the chlorine is released by the pressure and without acids, thus expediting the process, and lessening the expense.

We claim no particular form of apparatus or machinery. What we claim as our invention, and desire to secure by Letters Patent, is—

The bleaching and dyeing of cloths, yarns, and other textile fabrics, by the combined or separate use of hydraulic or hydro-dynamic and pneumatic pressure, in a closed vessel or cylinder, in combination with rotary motion, or internal agitation or movement of the liquors, cloths, and fabrics, while under pressure, by the means and substantially as above described.

I. C. COLTON,
ALBERT M. HASTINGS.

Witnesses:

WILLIAM H. REYNOLDS,
ROBERT J. LESTER.