L. J. MATOS.

DYEING MACHINE.

APPLICATION FILED NOV. 24, 1913.

1,175,538.

Patented Mar. 14, 1916.

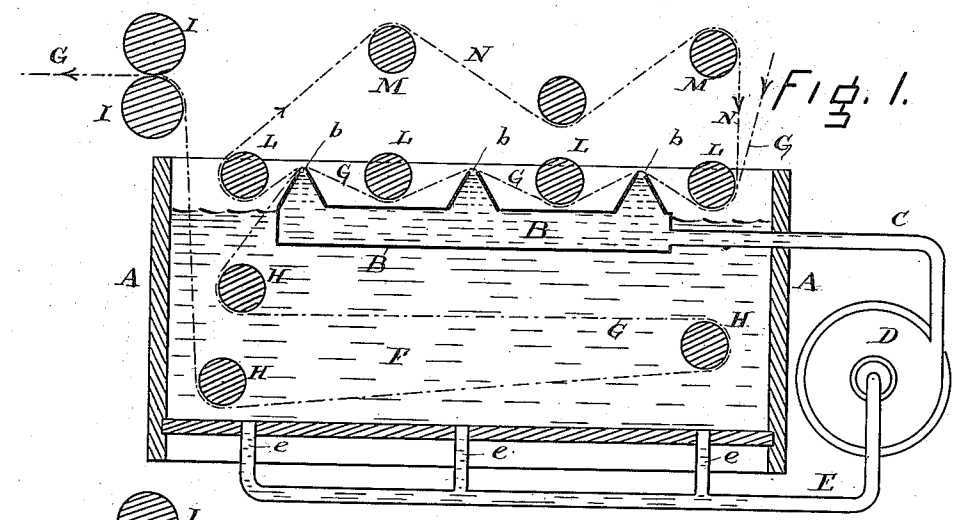

Fig. 1.

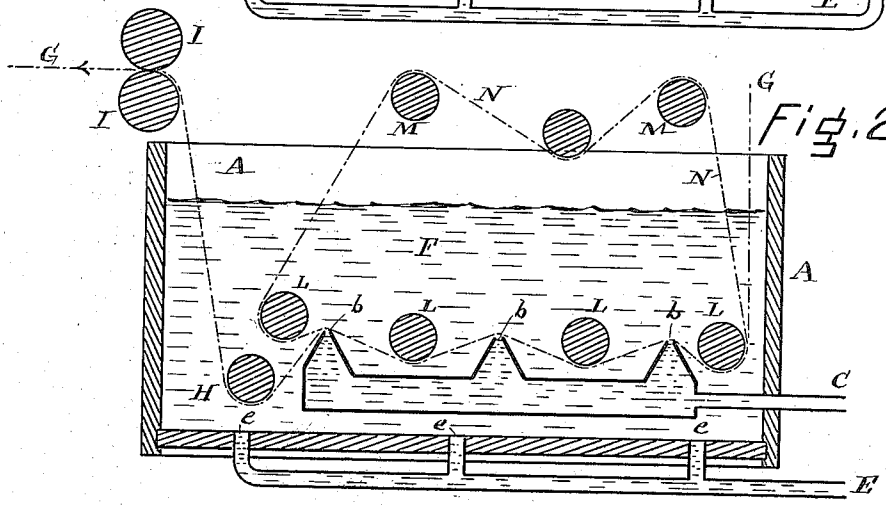

Fig. 2.

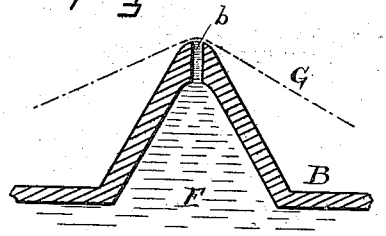

Fig. 3.

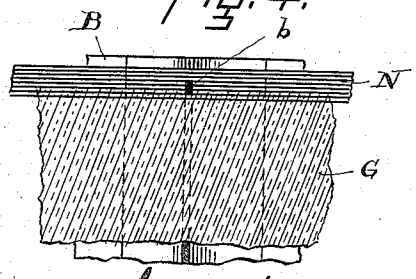

Fig. 4.

Witnesses:

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UNITED STATES PATENT OFFICE.

LOUIS J. MATOS, OF EAST ORANGE, NEW JERSEY.

DYEING-MACHINE.

1,175,538. Specification of Letters Patent. Patented Mar. 14, 1916.

Application filed November 24, 1913. Serial No. 802,744.

To all whom it may concern:

Be it known that I, LOUIS J. MATOS, chemical engineer, a citizen of the United States, and a resident of East Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Dyeing-Machines, of which the following is a specification.

My invention relates to that class of machines made use of for dyeing of or chemically treating piece goods, but more particularly in the heavy cotton fabrics such as duck or canvas.

Heretofore, in the dyeing or waterproofing of heavy cotton fabrics, it has been a matter of great difficulty to cause the liquor to thoroughly penetrate the goods, mainly on account of the close texture of the fabrics, and also on account of the peculiar property possessed by the cotton fibers, when twisted and woven, of rapidly swelling when wetted, this swelling causing a more or less partial closing of the interstices in the fabric which almost effectively prevents the dyes or chemicals contained in the liquor from passing through the center of the cloth from both surfaces, as now handled on the well known type of machines, such as jigs, padding machines, continuous dyeing or impregnating machines, etc., the result being that the liquor can only partially penetrate the goods, even though pressure be applied to the soaked fabrics by means of squeezing rollers.

By my invention, heavy cotton fabrics may be impregnated with dye or other solutions through from surface to surface, a result accomplished by means of the apparatus shown in the accompanying drawings in which like letters refer to like parts.

In the said drawings, Figure 1 represents a longitudinal vertical section of a machine constructed according to my invention. Fig. 2 is a longitudinal vertical section of a modified form thereof; and Figs. 3 and 4 are detail views, hereinafter more particularly described.

In carrying my invention into effect in the embodiment shown in Fig. 1, I provide a vat or kettle A, a slotted pressure box B, provided with longitudinal slotted outlets *b*, the box B is connected by means of a pipe C to a pump D. This pump D is connected by means of a pipe E and inlets *e* to the bottom of the kettle A, F is the impregnating or dye liquor which is withdrawn through the outlets *e* and the pipe E by the action of the pump D and forced into the pressure box B, from which it passes outward through the apical slots *b*, and forced through the thickness of the fabric G, which is held taut over the apical slots *b* by tension imparted to it by means of the rollers L, L, L, L, while longitudinal motion is imparted to the cloth G, by a power actuated winder beyond the squeeze rollers I, I. The impregnated fabric then passes under the submerged rollers H, H, H, when further action of the dye liquor if such be used, tends to cause a leveling of the shade. The fabric then passes out of the kettle through the squeeze rollers I, I.

In cases where the width of the goods to be impregnated or dyed is less than the length of the apical slots *b* of the pressure box B, I provide two endless bands of fabric N, which is carried around the tension rollers L, L, L, L, M, M, said endless bands N being of sufficient width to overlap and extend beyond the selvage of the farbic G, and the slot *b*, and at the same time to equalize the pressure of the liquor.

The dye liquor after having been forced through the moving fabric, flows back into the dye kettle A, and is continually circulated by means of the pump D, or it may be caught in a suitable trough and run into a storage tank where it may be replenished with further quantities of dyestuff and chemicals.

Fig. 3 is a cross section of one of the apical outlets *b* of the pressure box B, over which the goods pass while the dye liquor is forced through it.

Fig. 4 is a plan view showing the cloth G, passing over a series of apical slotted openings *b*, *b*, *b*, and held in place by the endless bands N, N, which cause equal pressure of the dye liquor along the length of the openings, and consequently equal penetration of the cloth.

The modification shown in Fig. 2 is identical with that shown in Fig. 1, except that the pressure box B is placed at or near the bottom of the dye kettle A, and submerged in the dye liquor F; and that the space between the rollers L L L L and the rollers M M is greater, and the endless bands N N consequently longer.

I do not confine myself to the exact con-

struction described, as it is obvious that various other constructions may be employed, without departing from the spirit and scope of my invention.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent is:

1. A dyeing or impregnating machine comprising a pressure box provided with an inlet and an outlet, a pump connected with said pressure box, a roller adapted to bring fabric to be dyed into contact with the outlet of said pressure box, and a selvage band passing between said roller and said pressure box.

2. A dyeing or impregnating machine comprising a pressure box, provided with an inlet and an outlet, a pump connected with said pressure box, a roller adapted to bring fabric to be dyed into contact with the outlet of said pressure box, a selvage band passing between said roller and said pressure box, and a guide roller.

3. A dyeing or impregnating machine comprising a pressure box provided with an apical slotted opening, a roller adapted to bring fabric to be dyed in contact with said opening, and a pump having its outlet connected with said pressure box.

4. A dyeing or impregnating machine comprising a pressure box, said pressure box being provided with an apical slotted opening, a roller adapted to bring fabric to be dyed in contact with said opening, a dye kettle adapted to receive dye liquor from said pressure box, and a circulating pump having its inlet connected with said dye kettle and having its outlet connected with said pressure box.

Signed at New York in the county of New York and State of New York this 1st day of October A. D. 1913.

LOUIS J. MATOS.

Witnesses:
E. L. SAVAGE,
W. A. DODDS.