

(No Model.)

J. H. LORIMER.
DYEING OR SCOURING MACHINE.

No. 480,502.

Patented Aug. 9, 1892.

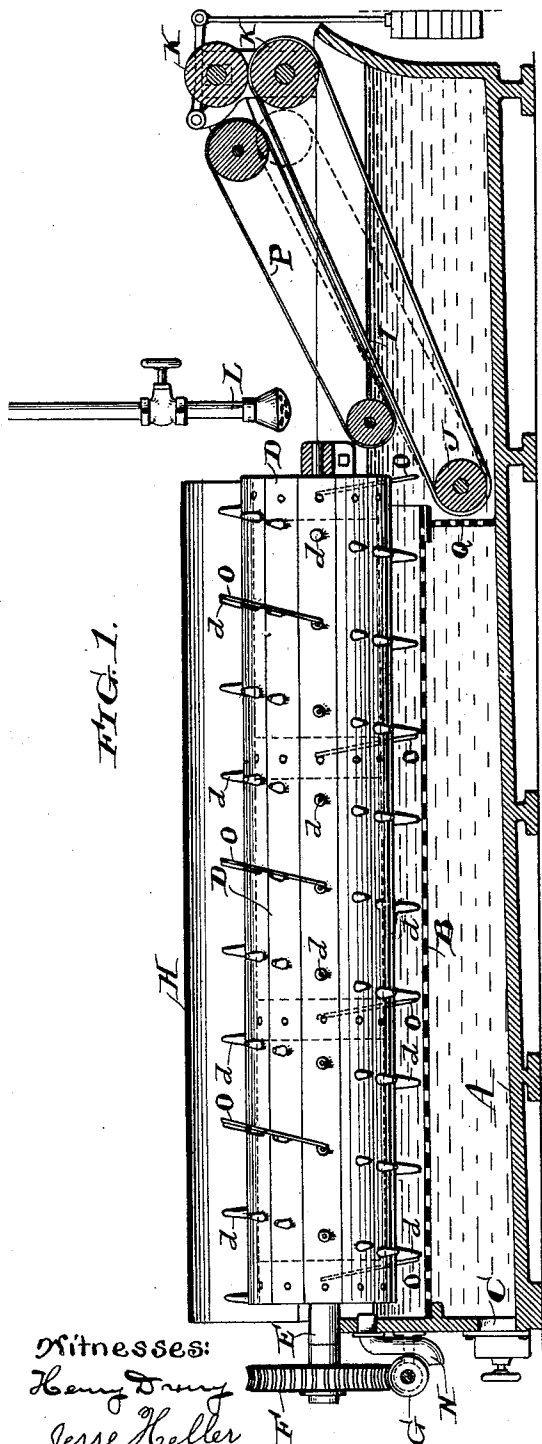


FIG. 1.

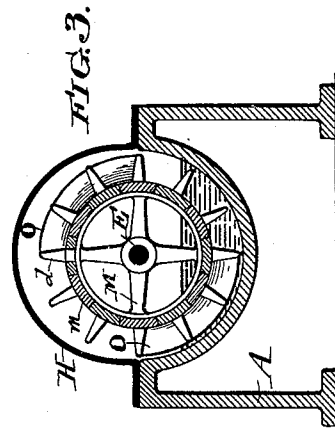


FIG. 3.

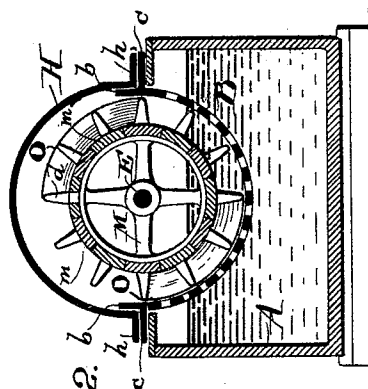


FIG. 2.

Witnesses:
Henry D. Dwyer
Jesse Heller

Inventor:
John H. Lorimer.
By his attorney
Matthew W. ...

UNITED STATES PATENT OFFICE.

JOHN H. LORIMER, OF PHILADELPHIA, PENNSYLVANIA.

DYEING OR SCOURING MACHINE.

SPECIFICATION forming part of Letters Patent No. 480,502, dated August 9, 1892.

Application filed June 20, 1891. Serial No. 396,904. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. LORIMER, of the city and county of Philadelphia, and State of Pennsylvania, have invented an Improvement in Dyeing or Scouring Machines, of which the following is a specification.

My invention relates to dyeing, washing, or scouring machines; and it consists of certain improvements which are fully set forth in the following specification, and are shown in the accompanying drawings, which form a part thereof.

My invention is more particularly designed for washing, dyeing, or otherwise treating hair, wool, cotton, or other fibrous material by conveying it through the liquor in the vat or tank.

It is the object of my invention to convey the material through the liquor in such a manner that it shall become thoroughly saturated therewith and that every fiber of the material may be brought in contact with the cleansing or dyeing liquor as the material is moved through it.

In carrying out my invention I arrange in the liquor tank or vat a cylinder or drum provided upon its periphery with a series of spirally-arranged pins or projections. The cylinder or drum is rotated in any convenient manner and conveys the material under treatment through the liquor with a gradual forward movement, separating the fibers and thoroughly subjecting them to the liquor. The surface adjacent to the drum or cylinder over which the material is moved is preferably curved and may be a portion of the tank itself, or it may be a diaphragm mounted therein. The employment of a large drum or cylinder prevents the winding of the material upon the surface, and pins or projections, while acting to separate the fibers, present no obstruction to the liquid, so that it may circulate freely among the fibers of the material. The pins or projections also prevent the binding of the material upon the curved surface over which it is moved, as is liable to occur if a spiral ledge or continuous piece is employed. In addition to the pins or projections, a number of wings may be employed, arranged in a spiral direction at different points upon the periphery of the drum to as-

sist in conveying the material. The material may be delivered by the spirally-arranged pins of the cylinder to an apron or carrier, by which it may be conveyed out of the tank or through the squeeze-rolls.

In the drawings, Figure 1 is a sectional side elevation of a dyeing or scouring machine embodying my improvements. Fig. 2 is a transverse vertical sectional view of the same through the line *xx* of Fig. 1. Fig. 3 is a similar view of a modification of the same.

A is the vat or tank, which may be of any convenient construction or form.

B is a curved diaphragm arranged within the vat or tank A. I prefer to employ a perforated diaphragm, as shown, to permit the liquor to circulate freely through it and to allow the sediment or dirt from the cleaning process to pass out through it into the vat.

C is a door in the lower portion of the vat, through which the collection of dirt or deposit of sediment may be removed.

The diaphragm B may be omitted, and the drum, with its pins, may be arranged above the surface of the vat itself, as shown in Fig. 3.

D is the drum or cylinder, having a large diameter and carried upon a shaft E. The shaft E is journaled in the vat so as to either partly or wholly submerge the cylinder therein. The drum may be rotated in any convenient manner, as by a gear-wheel F upon the shaft E and a worm G.

Arranged upon the periphery of the drum or cylinder D are a series of spirally-arranged pins or projections *d*, extending over the peripheries of the drum in a spiral manner, as shown.

O is a series of wings arranged at intervals upon the periphery of the drum D to assist the pins *d* in conveying the material through the liquor.

H is a cover or hood arranged upon the vat over the drum or cylinder D.

I is an endless carrier or apron passing over a guide J, located below the level of the liquor on the vat or tank adjacent to the end of the drum D.

In practice I prefer to arrange one of the wings O upon the end of the drum, projecting slightly over the carrier I, so as to posi-

tively feed the material directly upon the carrier, as is shown in Fig. 1. The apron or carrier extends up out of the liquor, so as to carry the material thence to the squeeze-rolls or out of the vat.

K K are the squeeze-rolls. The apron or carrier I may pass over one of the squeeze-rolls, as shown in Fig. 1, or it may pass over an independent guide, as is shown in dotted lines in Fig. 1.

P is a second apron, which may be employed above the apron or carrier I. The material is conveyed from the vat between the faces of these aprons P and I.

L is a liquor-pipe for supplying liquor to the vat.

The drum or cylinder D is preferably formed of longitudinal wooden strips *m*, secured to spiders M.

The diaphragm B may be formed with a projecting ledge or flange *b*, extending above the surface of the vat, and with a lateral flange *c*, resting upon the surface of the vat, as is shown in Fig. 2. This serves as a convenient manner of supporting the diaphragm and the box or cover H, the flange *h* of which may rest upon the flange *c*. The projecting flange or ledge *b* also serves to prevent the splashing of the liquor over the top of the tank or vat. The hood H is thus removably supported and may be taken off when it is desired to expose the drum. The diaphragm B may also be removed, if desired, to clean out the vat.

N is a liquor overflow-pipe leading from the vat.

Q is a perforated screen to prevent any material that may fall into the tank or vat passing back under the diaphragm B.

The operation of the apparatus will be readily understood. The material to be treated is dropped into the tank at its rear end, and, falling upon the diaphragm B, is carried forward over it by the spirally-arranged pins and wings of the drum. The material is thus moved forward gradually and positively through the liquor and is delivered to the carrier I, by which it is conducted out of the tank or to the squeeze-rolls K K.

While I prefer the minor details of construction which have been shown, I do not limit myself to them, as they may obviously be varied without departing from the invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a dyeing, washing, or scouring machine, the combination of a liquor vat or tank, a diaphragm in said liquor-tank below the level of the liquor therein, and a rotary drum or cylinder of substantial diameter journaled immediately above the diaphragm in the liquor-tank and having its periphery provided with a series of short projecting pins, the ends of which are immediately adjacent to the surface of the diaphragm, arranged in a

spiral about the periphery of the drum or cylinder.

2. In a dyeing, washing, or scouring machine, the combination of a liquor vat or tank, a diaphragm in said liquor-tank below the level of the liquor therein, a rotary drum or cylinder of substantial diameter journaled immediately above the diaphragm in the liquor-tank and having its periphery provided with a series of short projecting pins, the ends of which are immediately adjacent to the surface of the diaphragm arranged in a spiral about the periphery of the drum or cylinder, and a series of projecting wings carried by the drum or cylinder to assist the pins in moving the material over the diaphragm.

3. In a dyeing, washing, or scouring apparatus, the combination of a liquor-tank, a perforated diaphragm supported therein below the liquor-level, and a rotary drum or cylinder journaled above said perforated diaphragm and having its periphery provided with a series of short pins or projections arranged about it in a spiral manner and immediately adjacent to the surface of the perforated diaphragm.

4. In a dyeing, washing, or scouring machine, the combination of a liquor vat or tank having a diaphragm or surface to support the material to be treated, and a rotary drum or cylinder of substantial diameter journaled above the diaphragm and having its periphery provided with a series of projecting wings O, arranged at intervals about the periphery in a spiral line, each of the wings having a substantial breadth, so as to extend over a portion of the periphery of the drum or cylinder.

5. In a dyeing, washing, or scouring machine, the combination of a liquor tank or vat having a diaphragm or surface to support the material to be treated, located below the level of the liquor and having a length shorter than the length of the vat, and a rotary drum or cylinder journaled over said diaphragm or supporting-surface and having its periphery provided with a series of short projecting pins.

6. In a dyeing, washing, or scouring apparatus, the combination of a liquor tank, a rotary drum or cylinder journaled therein and having its periphery provided with a series of spirally-arranged pins or projections and a movable hood or cover arranged over said drum or cylinder and separate from the liquor-tank, so as to be moved therefrom to expose the rotary drum or cylinder.

7. In a dyeing, washing, or scouring apparatus, the combination of a liquor-tank, a drum or cylinder journaled therein and having its periphery provided with a series of spirally-arranged pins or projections and a carrier arranged adjacent to the forward end of said drum below the normal level of the liquor in the tank and extending up above said normal liquor-level.

8. In a dyeing, washing, or scouring appa-

5 ratus, the combination of a liquor vat or tank, a curved perforated diaphragm arranged therein and having its surface below the normal level of the liquor and provided with a longitudinal projecting ledge or rim extending above the upper surface of the tank, and a rotary drum or cylinder journaled above said diaphragm, provided upon its periphery with a series of projections or pins.

10 9. In a dyeing, washing, or scouring apparatus, the combination of the vat A, the perforated diaphragm B, supported therein, having the lateral flange c resting upon the top of the vat A, and the upwardly-projecting flange b, and the removable hood or cover H, having the flange h, adapted to rest upon the flange c.

15 10. In a dyeing, washing, or scouring machine, the combination of a liquor vat or tank,

and a rotary drum or cylinder journaled therein and having its periphery provided with a series of spirally-arranged pins or projections and with a number of projecting wings. 20

11. In a dyeing, washing, or scouring machine, the combination of a liquor-vat, a rotary drum or cylinder journaled therein and having a large diameter, and a series of wings carried by the periphery of the drum and projecting therefrom and arranged at a distance one from another and in a spiral direction about the periphery of the drum. 25 30

In testimony of which invention I have hereunto set my hand.

JOHN H. LORIMER.

Witnesses:

ERNEST HOWARD HUNTER,
JOHN ALEXANDER BRAMLEY.