(No Model.)

J. H. LORIMER.

APPARATUS FOR DYEING.

No. 418,801. Patented Jan. 7, 1890.

FIG. 1.

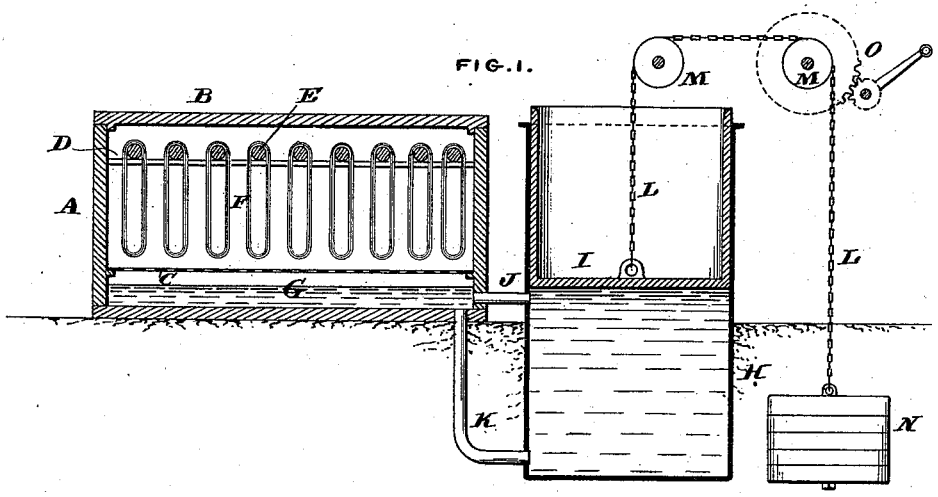


FIG. 2.

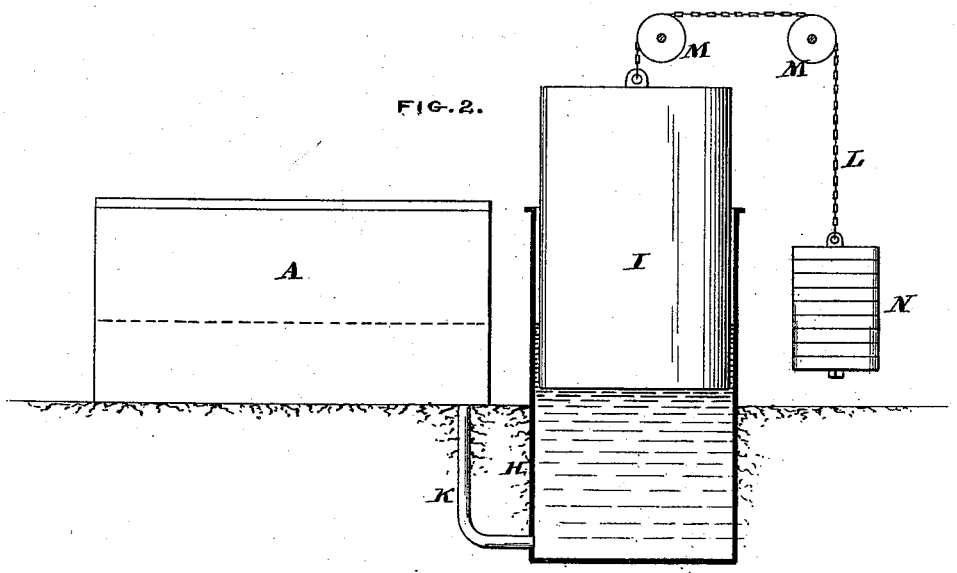
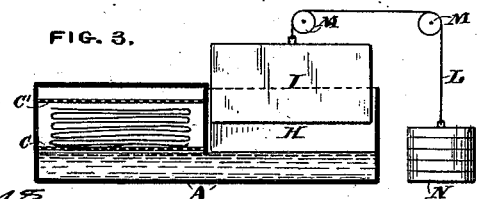


FIG. 3.



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APPARATUS FOR DYEING.

SPECIFICATION forming part of Letters Patent No. 418,801, dated January 7, 1890.

Application filed April 17, 1889. Serial No. 307,529. (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 Apparatus, of which the following is a specification.

My invention has reference to dyeing apparatus; and it consists of certain improvements which are fully set forth in the following specification, and shown in the accompanying drawings, which form a part thereof.

In carrying out my invention I provide a vat of any suitable construction for containing and holding the material to be treated, and combined therewith is a tank of suitable dimensions and provided with a plunger or displacing device, which, upon descending into the vessel or reservoir, causes the liquid therein to flow into the vat and rise up through the material to be treated. The raising and lowering of the plunger or displacing device causes the liquid to fall and rise through the material in the dye-vat, and thus treat it to the desired extent.

It is evident that the invention is equally applicable to scouring purposes as well as for dyeing.

Referring to the drawings, Figure 1 is a sectional elevation of the dyeing parts embodying my invention. Fig. 2 is a side elevation of a modification of same with the reservoir or tank in section; and Fig. 3 is a sectional elevation of another modification, in which the vat and tank are made integral.

A is the vat, and may be formed with a removable cover B and a perforated diaphragm C, arranged near its bottom. Near the upper part of the vat are supports, upon which the cross bars or poles E rest at their extremity, and upon these poles are supported the skeins of yarn or other material to be treated.

H is a large tank arranged adjacent to the vat and connected with the space G thereof below the diaphragm C by pipes K and J.

I is a plunger or piston working in the tank or reservoir H, and may be raised or lowered by means of a chain L, passing over pulleys M M, and lever mechanism O. The piston or plunger I may be counterweighted by weights N, connected to the other end of the chain L. By operating the plunger up and down the liquid in the reservoir or tank H is caused to flow into and out of the vat and rise and fall therein, so as to alternately envelop the material to be treated and expose it to the atmosphere.

It is not necessary that the plunger I fit the tank H tightly, as it might be a substantially close fit without actual contact on the sides, as shown in Fig. 2, in which case the displacing action of the plunger I will cause the liquid to rise in the vat A. It is evident that the tank H and vat A might be arranged in one integral structure, as shown in Fig. 3. In this case the plunger I acts in the same manner as in Figs. 1 and 2. It is also clear that the material to be treated might be arranged in the vat A in any suitable manner and need not necessarily be on the poles E.

In Fig. 3 the material is shown as placed between a lower perforated diaphragm C and an upper perforated diaphragm C′, and the liquid is caused to circulate up and down through the said diaphragms and the material to be treated.

I do not limit myself to the minute details here shown, as it is evident that they may be more or less modified to suit the particular purpose for which the machine is used.

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

1. A vat for holding material to be treated, a tank or reservoir forming a receptacle for normally holding the liquid for treating the material, a connecting passage-way between the vat and tank, and a displacing-plunger working in and out of said tank or reservoir for causing the liquid to rise and fall in the vat.

2. A vat for holding material to be treated, provided near its bottom with a perforated diaphragm, a tank or reservoir forming a receptacle for normally holding the liquid for treating the material, a connecting passage-way between the vat below the perforated diaphragm and the tank, and a displacing-plunger working in and out of said tank or reservoir for causing the liquid to rise and fall in the vat.

3. A vat for holding material to be treated,

a tank or reservoir forming a receptacle for normally holding the liquid for treating the material, a connecting passage-way between the vat and tank, a displacing-plunger working in and out of said tank or reservoir for causing the liquid to rise and fall in the vat, and power mechanism for operating the plunger within the tank or reservoir.

4. A vat for holding material to be treated, having a support at its upper part, cross bars or poles resting upon said supports and holding the material to be treated, a tank or reservoir for holding the liquid used to treat the material, a passage-way between the lower parts of the vat and tank, and a movable displacing-plunger for said tank for forcing the liquid to flow between the tank and vat.

5. A vat for holding material to be treated, having a support at its upper part and a perforated diaphragm near its lower part, cross bars or poles resting upon said supports and holding the material to be treated above the diaphragm, a tank or reservoir for holding the liquid used to treat the material, a passage-way between the lower parts of the vat and tank, and a movable displacing-plunger for said tank for forcing the liquid to flow between the tank and vat.

6. The combination of two receptacles having a communicating passage-way at their lower parts, one of said receptacles being adapted to hold the material to be treated and the other the liquid for treating the material, and a loose movable displacing-plunger for said liquid-receptacle.

7. The combination of two receptacles having a communicating passage-way at their lower parts, one of said receptacles being adapted to hold the material to be treated and the other being much deeper and adapted to hold the liquid for treating the material, and a movable displacing-plunger for said liquid-receptacle.

8. A vat for holding material to be treated, a tank or reservoir forming a receptacle for normally holding the liquid for treating the material, a connecting passage-way between the vat and tank, a displacing-plunger working in and out of said tank or reservoir for causing the liquid to rise and fall in the vat, and counterbalancing devices to counterbalance the weight of the plunger to enable it to be easily operated.

9. A vat for holding material to be treated, a tank or reservoir forming a receptacle for normally holding the liquid for treating the material, a connecting passage-way between the vat and tank, a displacing-plunger working in and out of said tank or reservoir for causing the liquid to rise and fall in the vat, counterbalancing devices to counterbalance the weight of the plunger to enable it to be easily operated, and power mechanism to operate said plunger to raise and lower it.

In testimony of which invention I hereunto set my hand.

JOHN H. LORIMER.

Witnesses:
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S. T. YERKES.