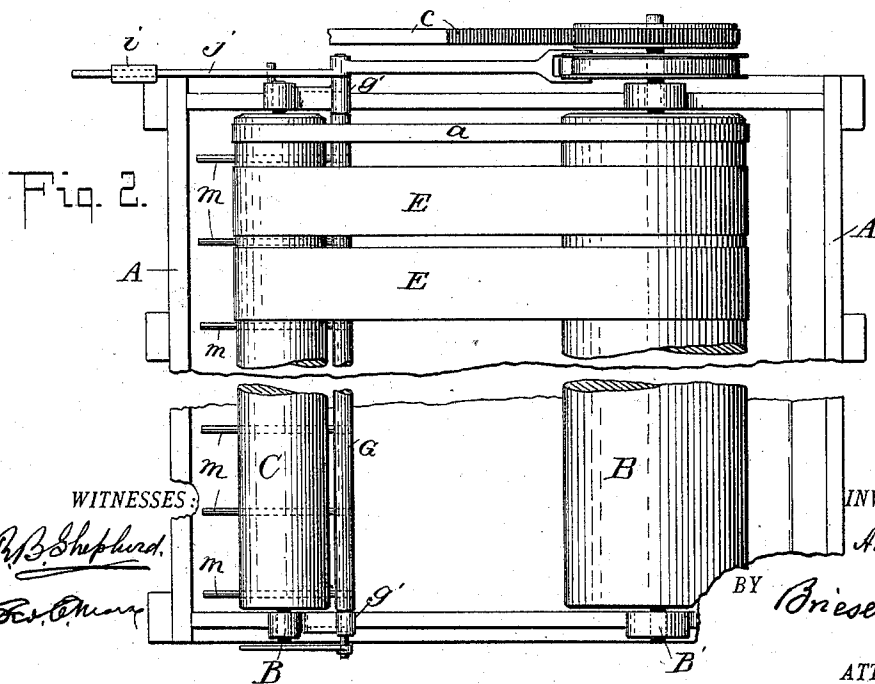
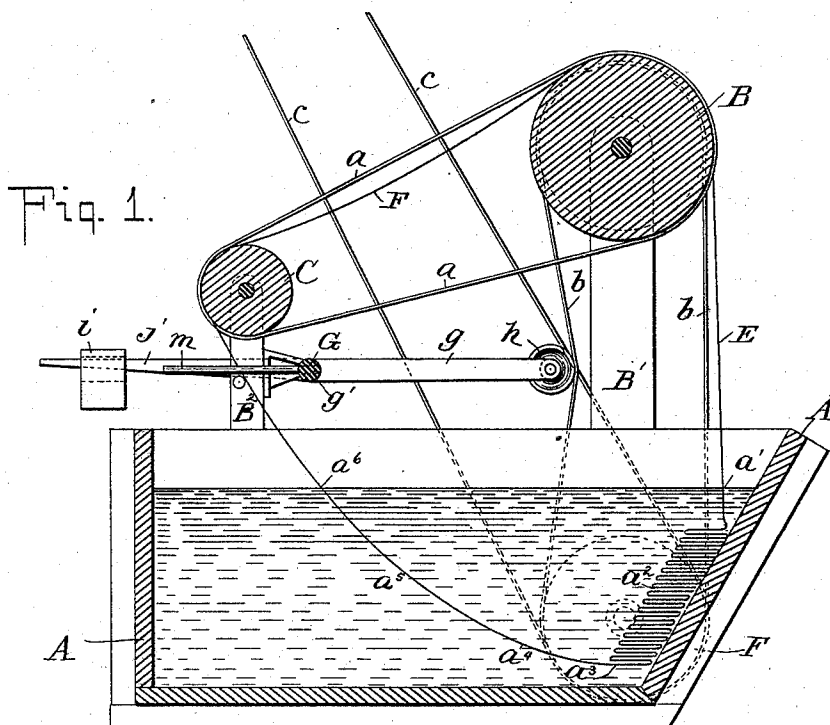


(No Model.)

A. HINZE.
DYEING APPARATUS.

No. 535,902.

Patented Mar. 19, 1895.



WITNESSES:
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UNITED STATES PATENT OFFICE.

ADOLPH HINZE, OF NEW YORK, N. Y.

DYEING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 535,902, dated March 19, 1895.

Application filed January 3, 1894. Serial No. 495,504. (No model.)

To all whom it may concern:

Be it known that I, ADOLPH HINZE, a resident of the city, county, and State of New York, have invented an Improved Dyeing Apparatus, of which the following is a specification.

My invention relates to apparatus for dyeing, and has for its object to produce an apparatus which will dye fabrics in an efficient manner and will operate to arrest the motion of the apparatus when any knot or entanglement occurs in the fabric during the process of dyeing.

To this end my invention consists in the apparatus described herein, illustrated in the accompanying drawings, forming part hereof, and more particularly pointed out in the claims.

In the drawings, forming part hereof—Figure 1 is a sectional elevation of a dyeing apparatus embodying my invention, and Fig. 2 is a broken away plan view of the same.

In the drawings A is a vat containing suitable dye liquor.

B is a drum, which I shall hereinafter refer to as the dropping-drum, mounted above and in proximity to the vat and at or near one end thereof. C is a drum, which I shall hereinafter refer to as the withdrawing-drum, mounted above and in proximity to the vat at or near the other end thereof. These drums may be supported in any suitable manner, but I have found it convenient to support them by brackets or standards B' B² mounted on the sides of the vat A. Passing around these drums and dipping into the vat are suitable webs or lengths of fabric E to be dyed. The drum B is driven from any suitable source of power in any suitable manner.

In the apparatus illustrated, the drum B is belted to a pulley F by means of a belt b, and the pulley F is driven from a suitable source of power, not shown, by a belt c.

In order that the dropping-drum and the withdrawing-drum may have the same peripheral speed, I prefer to belt them in the manner shown by means of a belt a, but the drums may be separately driven, if desired.

The mode of operation of the dyeing apparatus is as follows: The cloth passing over the dropping-drum B is dropped in a perpendicular plane into the vat A at a' and forms

in the liquid contained in the vat folds or wrinkles a² and from the lower part of this wrinkled portion of the fabric a³ the withdrawing-drum gradually takes its supply, allowing the fabric from the said withdrawing-drum to pass over on to the dropping-drum, whence it is again dropped into the vat, and the operation is repeated. The advantage of this arrangement is two-fold. In the first place, it creates within the liquid in the vat a certain agitation by moving the fabric laterally through the liquid instead of vertically as heretofore in the single drum arrangement, which agitation may be compared with the act of rinsing, having for its principal effect a thorough and equal permeation of the fabric by the liquid through which said fabric, when so agitated, is being drawn. Consequently this arrangement results in the avoidance of a certain amount of friction as compared with the single drum arrangement, because in the single drum arrangement the withdrawing side of the single drum had to lift the entire vertical column of fabric which was equal in length to the vertical column of fabric which depended from the dropping side of that drum; while in the present arrangement the withdrawing-drum, in the first place, can be located, as shown, closer to the liquid than the dropping-drum, and will therefore not have as much to lift vertically, if it did lift vertically; but in addition to this, the withdrawing-drum does not lift vertically; it lifts only that portion of the fabric in a substantially vertical direction which is found to be above the liquid while the portion of the fabric within the liquid is moved as heretofore stated in a substantially lateral direction, namely, in a catenary curve a⁴, a⁵, a⁶, toward the top of the liquid under the withdrawing-drum. The work of withdrawing the fabric is therefore distributed between the drums and does not come wholly upon either drum.

Coming now to the stop arrangement, it consists in this instance of a pivoted comb G, having teeth m, which is pivoted at g' and balanced so as to remain, during the proper operation of the apparatus, in a, say, substantially horizontal position and has a projecting arm g carrying a friction pulley h which bears upon and tightens the driving belt b for the dipping-drum. In the normal or balanced

position the friction pulley *h* will hold the belt at the proper tension to cause it to rotate the dipping-drum. When, however, the balanced comb is raised or otherwise moved by
5 a knot or entanglement in the fabric this friction pulley is thereby moved away from the said belt, slackening the same and causing the arrest of the dropping-drum and by suitable means connected with the dropping-drum,
10 causes the arrest of the withdrawing drum. The comb for this purpose is by preference provided with a sliding weight *i* on a projecting arm *j* which, the moment the entanglement commences to move the comb, will slide
15 toward the pivotal center *g'* of the comb and thereby facilitate the withdrawal of the friction pulley from the said belt.

I do not limit myself to the precise construction and arrangement herein shown, as
20 it is obvious that the apparatus may be varied within certain limits without departing from the spirit of my invention, but

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

1. In a dyeing machine, the combination of 25
a vat A, and a drum with a suitable driving belt for rotating said drum, a pivoted comb E having a sliding counterbalancing weight, and an idler adapted to bear against said belt and release the tension thereon when the comb 30
is operated, substantially as described.

2. In a dyeing machine, the combination of a vat A, and a drum, with mechanism substantially as described for rotating said drum, and with a pivoted comb E having teeth *m*, 35
arm *g*, friction pulley *h* engaging the rotating mechanism for the drum B, arm *j* and sliding weight *i*, whereby, when the comb is tilted, the driving mechanism is thrown out of gear with the drum B substantially as described. 40

ADOLPH HINZE.

Witnesses:

GEO. E. MORSE,
HARRY M. TURK.