

(No Model.)

3 Sheets—Sheet 1.

G. M. UNDY.
APPARATUS FOR DYEING.

No. 476,580.

Patented June 7, 1892.

FIG. 1.

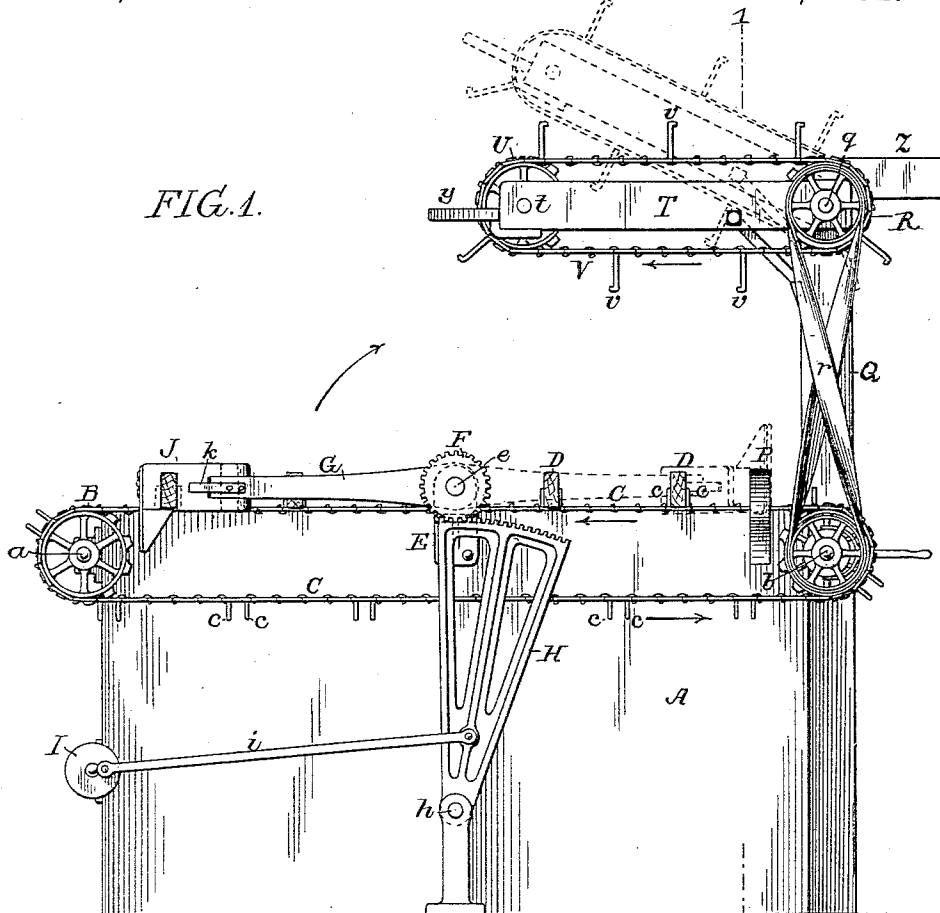
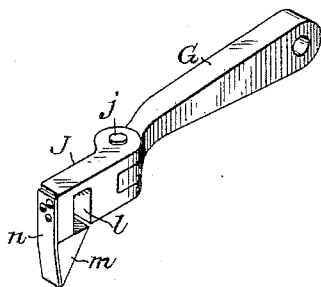


FIG. 3.



Witnesses:

Fred H. Goodwin
Murray C. Boyer

Inventor:

George M. Undy
by his Attorneys
Howson & Howson

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3 Sheets—Sheet 2.

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FIG. 2.

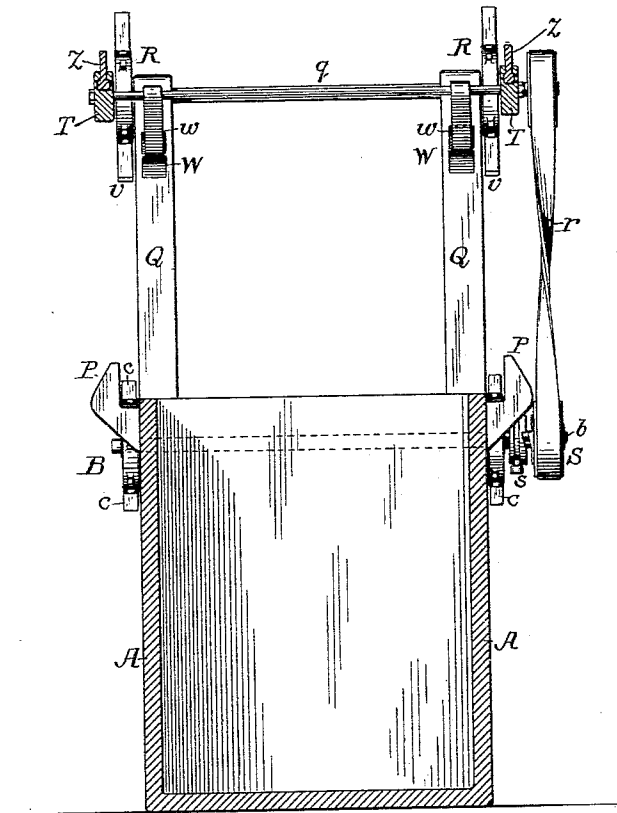
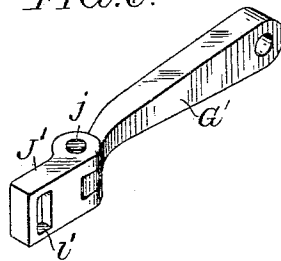


FIG. 6.



Witnesses:

Fred D. Goodwin
Murray C. Boyer

Inventor:
George M. Undy
by his Attorneys

Hawson & Hawson

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FIG. 4.

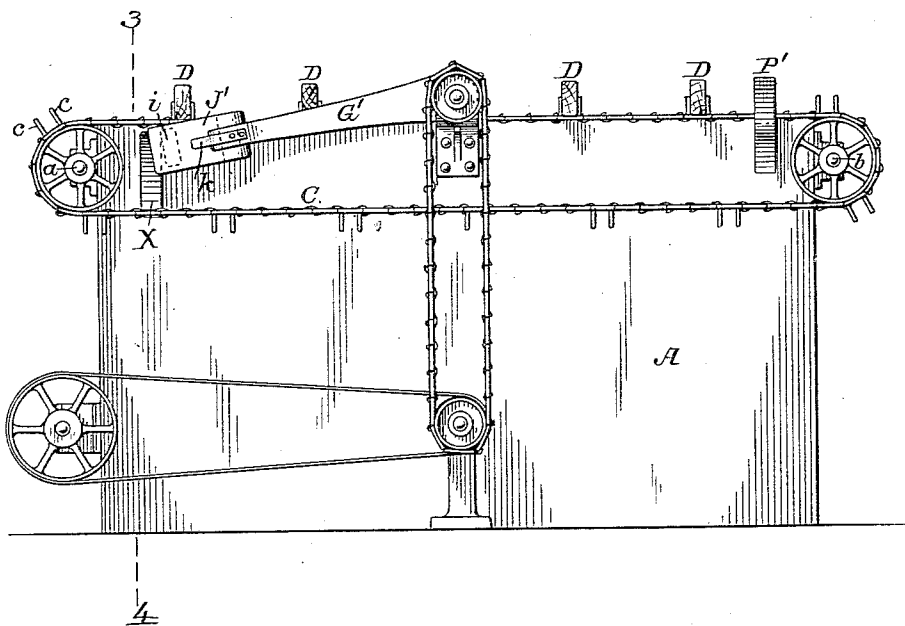
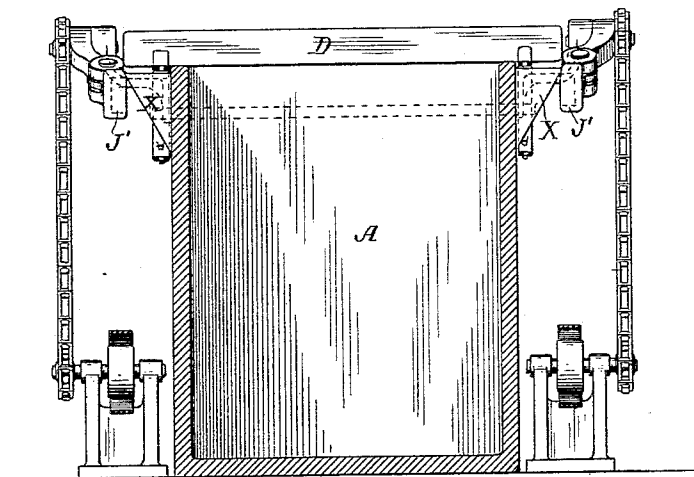


FIG. 5.



Witnesses:
Fred W. Goodwin
Murray C. Boyer

Inventor:
George M. Undy
by his Attorneys
Howson & Howson

UNITED STATES PATENT OFFICE.

GEORGE M. UNDY, OF PHILADELPHIA, PENNSYLVANIA.

APPARATUS FOR DYEING.

SPECIFICATION forming part of Letters Patent No. 476,580, dated June 7, 1892.

Application filed December 14, 1891. Serial No. 414,949. (No model.)

To all whom it may concern:

Be it known that I, GEORGE M. UNDY, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Dyeing-Machines, of which the following is a specification.

My invention relates to certain improvements in machines for dyeing hanks or skeins of yarn; and it consists in the employment of a device for traversing the yarn-carrying bars from end to end of the vat or tank and an oscillated or continuously-revolved arm for returning the bars to the feed end of the tank or to deliver them from such tank when necessary, as more fully described hereinafter.

In the accompanying drawings, Figure 1 is an elevation of a yarn-dyeing machine constructed in accordance with my invention. Fig. 2 is a transverse section of the same on the line 1 2, Fig. 1. Fig. 3 is a perspective view of one of the lifting-arms. Fig. 4 is a side elevation of a modified form of machine. Fig. 5 is a sectional view on the line 3 4, Fig. 4; and Fig. 6 is a perspective view of one of the arms used in the modified construction of machine illustrated in Figs. 4 and 5.

Referring to the drawings, A represents a vat or tank provided at or near its opposite ends with transverse shafts *a* *b*, on which are mounted sprocket-wheels B, carrying a chain C, to which motion is imparted in any suitable manner in the direction of the arrows.

D represents the yarn-carrying bars, which are placed between upright fingers *c* on the chain at the feed end of the machine and are traversed by said chain to the opposite end of the tank, the bars resting on the edges of the tank, but having their ends projecting for some distance from its opposite sides.

E represents brackets bolted to the opposite sides of the vat at about its central portion, and on stub-shafts *e* on said brackets are mounted pinions F, secured to or forming part of lifting-arms G. An oscillating movement is imparted to these arms G to move them from the position shown in full lines to that shown in dotted lines and back again by any suitable mechanism—such, for instance, as a segment H, meshing with the pinion F, the segment being pivoted to a standard at *h* and having an oscillating movement imparted to it by a rotating crank-wheel I

through the medium of a connecting-rod *i*. At the outer end of each arm G is a block J, pivoted at *j* to the portion G and normally held in position (illustrated in Fig. 3) by means of a spring *k*. The block is slotted at *l*, and the open mouth of the slot is covered by an inclined block *m*, carried by a spring *n*, which normally tends to hold the inclined block in the position illustrated. At the front or feed end of the tank are wedge-shaped blocks P, adapted to act upon the blocks J when brought into contact therewith.

Q are uprights secured to the machine at the feed end and provided at their upper ends with bearings for a shaft *q*, carrying sprocket-wheels R R, and to which motion is imparted by a belt *r*, extending to a pulley S, running loosely on the shaft *b* and adapted to be driven when required by being engaged by a clutch *s* of any suitable character. These shafts *q* form the fulcrum for bars T, the outer ends of which are provided with bearings for a shaft *t*, on which are mounted sprocket-wheels U, connected by a chain V, having fingers *v*, with the sprocket-wheels R on the shaft *q*. This frame and its chain are normally in the position shown in dotted lines in Fig. 1 when the machine is in operation, being held up in such position by pawls W, adapted to steps W on the upright Q, as shown in Fig. 2.

In operation the bars containing the yarn are placed one by one upon the chains, which move said bars in the direction of the arrow toward the opposite end of the tank. Just before reaching such opposite end, however, the arms G are moved, causing the inclined blocks *m* on the blocks J to come into contact with the upper edge of the bar, forcing the springs *n* outward and permitting the bar to enter the recesses *l*. The springs *n* then return the inclined blocks *m* to their normal position and the bar is held within the recesses. The motion of the arms G is then reversed, and they are moved in the direction of the arrow until the blocks J come into contact with the inclined blocks P, causing such blocks to be forced outward against the action of the springs *k* and effecting the release of the yarn-carrying bar D. The movement of the chain is so timed that as the bar is released a pair of fingers *c* will be brought immediately

beneath the bar to receive it and again traverse it toward the opposite end of the tank. The arm G then returns to carry the next bar back, and the operation is continued as long as necessary to effect the complete dyeing of the yarn. All parts of the yarn are subjected to the action of the dyeing-fluid, owing to the fact that the bars are turned half-way round while being carried from one end of the machine to the other by the arms G; but when it is desired to deliver the yarn from the machine after the operation of dyeing has been completed the bars T are brought down to the position illustrated in full lines in Fig. 1 and the clutch thrown in, so as to rotate the chains V in the direction of the arrow, so that as the arms G arrive at a point midway of their throw the blocks J are operated upon by inclined blocks y, projecting from the arms T, are opened, and the bars are delivered at that point, the fingers v on the chain V catching the bars and traversing them to the end of the bars T, from whence they are forced onto bars Z, which are adapted normally to slide on the bars T, but when the yarn is being delivered are drawn out to receive the same.

In the modification illustrated in Figs. 4, 5, and 6 the operation is the same, except that the arm G' is rotated continuously in one direction and the blocks J' are forced back at one end of the tank by an inclined block to receive the ends of the yarn-carrying bars within an orifice U', the discharge being effected, as before, at the opposite end by an inclined block P', which forces back the blocks and permits the delivery of the yarn-carrying bar between the fingers c on the chain.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. The combination, in a yarn-dyeing machine, of the tank, the yarn-carrying bars, chains for moving said bars from end to end of the tank, and arms pivoted on the opposite sides of said tank adapted to carry the bars from one end of the tank to the other, substantially as specified.

2. In a yarn-dyeing machine, the combination of the tank, the yarn-carrying bars, devices for moving the same along the edge of the tank, and pivoted arms adapted to carry the yarn-carrying bars from one end of the tank to the other, with blocks at the outer ends of said arms, said blocks having pockets for the reception of the ends of the yarn-carrying bars, substantially as specified.

3. The combination, in a yarn-dyeing machine, of the tank, the yarn-carrying bars, devices for traversing the same along the edges of the tank, pivoted arms on the opposite sides of the tank, blocks J on the outer ends of said arms, pockets in said blocks for the reception of the yarn-carrying bars, and devices for operating upon said blocks, substantially as specified.

4. The combination, in a yarn-dyeing machine, of the tank, the yarn-carrying bars, devices for traversing said bars from end to end of the tank, and pivoted arms on the opposite sides of said tank adapted to carry the bars from one end of the tank to the other, blocks on the outer end of said arm, pockets in said blocks, inclined blocks adapted to close the mouths of said pockets, and springs adapted to act upon said inclined blocks, substantially as specified.

5. The combination, in a yarn-dyeing machine, of the tank, the yarn-carrying bars, mechanism for traversing said bars from end to end of the tank, pivoted blocks at the outer end of said arms, pockets therein for the reception of the ends of the yarn-carrying bars, and inclined blocks at the opposite end of the tank adapted to operate upon the blocks J and effect the release of the yarn-carrying bar, substantially as specified.

6. The combination, in a yarn-dyeing machine, of the tank, the yarn-carrying bars, mechanism for traversing said bars from end to end of the tank, pivoted arms on the opposite sides of said tank, and a movable frame, and delivery-chains carried by said frame, with devices for effecting the movement of said chains, substantially as specified.

7. The combination, in a yarn-dyeing machine, of the tank, the yarn-carrying bars, mechanism for traversing said bars from end to end of the tank, pivoted arms on the opposite sides of said tank, and a pivoted delivery-frame, and a delivery-chain thereon, with inclined blocks carried by said delivery-frame to operate upon the pivoted arms and effect the delivery of the yarn-carrying bars, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE M. UNDY.

Witnesses:

JNO. E. PARKER,
EUGENE ELTERICH.