

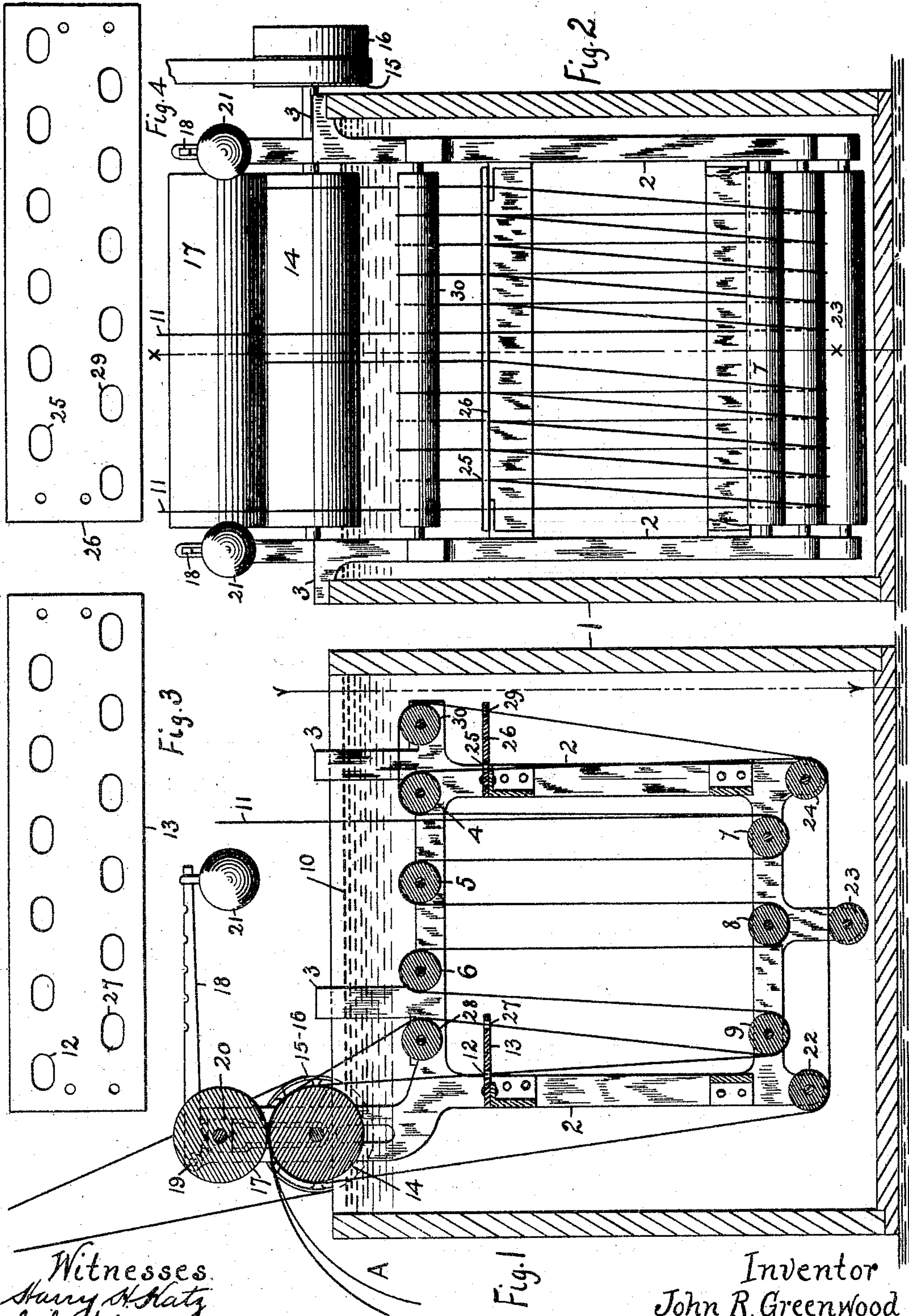
No. 776,237

PATENTED NOV. 29, 1904.

J. R. GREENWOOD.
DYEING MACHINE.

APPLICATION FILED FEB. 12, 1904.

NO MODEL.



Witnesses
Harry A. Katz
E. C. Kellogg

Inventor
John R. Greenwood
By R. C. Wright atty.

UNITED STATES PATENT OFFICE.

JOHN R. GREENWOOD, OF BOOTHWYN, PENNSYLVANIA.

DYEING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 776,237, dated November 29, 1904.

Application filed February 12, 1904. Serial No. 193,224. (No model.)

To all whom it may concern:

Be it known that I, JOHN R. GREENWOOD, a citizen of the United States, residing at Boothwyn, in the county of Delaware and State of Pennsylvania, have invented certain new and useful Improvements in Dyeing-Machines, of which the following is a specification.

This invention relates to mechanism for dyeing wherein the material to be dyed is continuously submerged within the dye without exposure to the atmosphere during the dyeing process. Heretofore the material had to be passed several times through the machine, and at each removal for another passage the material was for an extended time exposed to the atmosphere, which is very injurious to the process. In this machine the mechanism is supported upon a framework removably inserted in the vat and passes the material through the machine in return and continuously-repeated courses while immersed in the dye until the requisite color or shade is obtained, with a saving of time, labor in handling, and with uniform excellence in results. The construction of the machine while capable of continuing the material within the dye throughout the process, except for a very limited time, occupies no more space than the previous machines and can readily be installed in the same position, which is a decided advantage for plants already established.

The invention is illustrated in the accompanying drawings, wherein similar parts are indicated by similar characters of reference, in which—

Figure 1 is a longitudinal section on line X X, Fig. 2. Fig. 2 is a transverse section on line V V, Fig. 1. Fig. 3 is a plan view of the guide-plate at the driving end of the machine. Fig. 4 is a plan view of the guide-plate at the opposite end of the machine.

The machine is removably suspended in a vat 1, the vat preferably having the usual means (not shown) for heating the dye liquid, as has been the practice heretofore. The machine has a framework 2, suspended within the vat 1 by lugs 3, so that it can be lifted out, and carries top rollers 4 5 6 and bottom rollers 7 8 9, reaching across between the sides of frame 2, the rollers being submerged

below the top 10 of the dye liquid. The warp material 11 comes from above the machine and is carried at first under roller 7, up and over roller 5, down and under roller 8, up and over roller 6, down and under roller 9, thence through opening 12 in guide-plate 13, preferably of porcelain, to and between the driving-roller 14, which is provided with a tight pulley 15 and a loose pulley 16 or equivalent means for its driving, and the pressure-roller 17, which is provided with levers 18, fulcrumed at 19, bearing on boxes 20 and carrying weights 21 or equivalent pressure means. Thence it is returned to the opposite end of the machine by passing down and under guide-roller 22, over carrier-roller 23, under guide-roller 24, up through opening 25 in guide-plate 26, also preferably of porcelain, which deflects the material to one side, as seen in Fig. 2, and thence over roller 4 down to roller 7, which completes one return-circuit. The next circuit from roller 7 is parallel to the first one until passing roller 9, when the material passes through opening 27 in guide-plate 13, over roller 28, between rollers 14 17, and onto guide-plate 26, through its opening 29 to guide-roller 30 and rollers 4 7, completing the second return-circuit, and so on continuously in as many parallel return-circuits as are necessary for perfect results with the dye and material employed in the process.

When dyeing warps, which in some instances are composed of as many as two thousand "ends," great care must be exercised to prevent their becoming tangled and broken—hence the spreading and separating the material, as illustrated, at one end of the machine by means of the rollers 24 30 and guide-plate 26 and at the opposite end by means of roller 9, guide-roller 28, and guide-plate 13, which means prevent the trouble and damage. It will also be observed that at each end of the machine each alternate course of the material is separated and guided in parallel alignment by being passed through the offset openings 12 27 at one end of the machine and openings 25 29 at the other end of the machine, and so on in continuous succession until the process is completed, when the material finally passes from the machine between rolls

14 17 at A to enter the wash-tank, (not shown,) which may be of the usual or any suitable construction adapted to the purpose.

The machine is illustrated as when using
5 two warps or pieces of material, each making six return-circuits; but the number of warps or pieces run at once and the number of return-circuits made by each can be varied to suit needed conditions or the capacity of the
10 machine, which is only limited by the length of its rollers.

I claim—

1. In a dyeing-machine, in combination, a dye-vat, a framework removably suspended
15 therein, having a series of top and bottom rollers, a driving and a pressure roller to draw the material to be dyed over the rollers aforesaid, guide-rollers to pass the material back for successive passages, and guide-plates having off-
20 set openings or passages whereby adjacent

courses of the material may be separated, and also guided in parallel alinement.

2. In dyeing-machines, guide-plates having a double series of offset openings arranged in manner for each series of openings to come
25 opposite the spaces between the openings of the other series.

3. In dyeing-machines, porcelain guide-plates having a series of oblong openings adjacent each edge and arranged in manner to
30 have the openings adjacent one edge come opposite the spaces between the openings adjacent the opposite edge, and vice versa.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN R. GREENWOOD.

Witnesses:

RANSOM C. WRIGHT,
WILLIAM C. STOEVEY.