

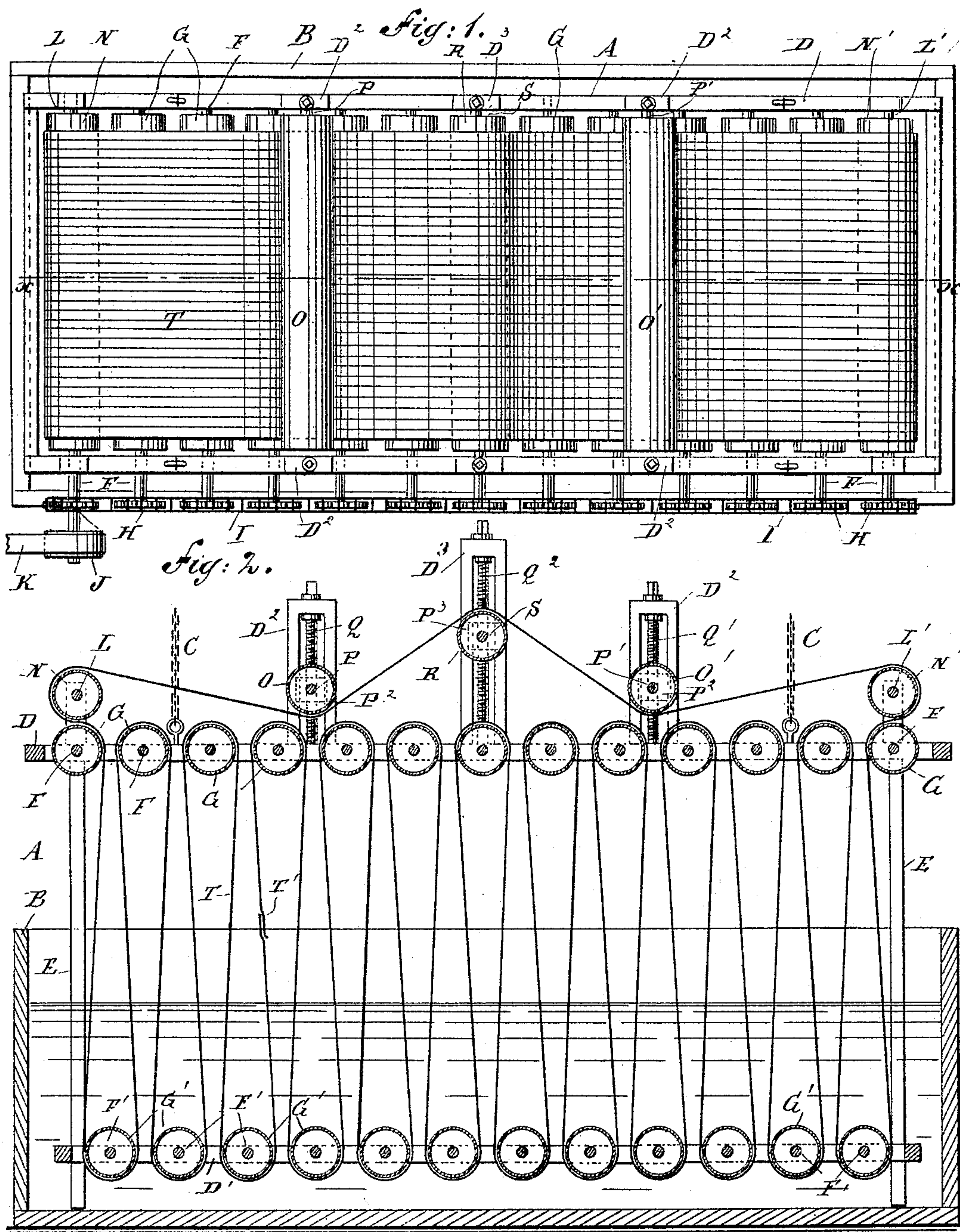
(No Model.)

G. MORLOT.

DYEING APPARATUS FOR WOVEN FABRICS.

No. 460,024.

Patented Sept. 22, 1891.



WITNESSES:

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DYEING APPARATUS FOR WOVEN FABRICS.

SPECIFICATION forming part of Letters Patent No. 460,024, dated September 22, 1891.

Application filed January 15, 1891. Serial No. 377,891. (No model.)

To all whom it may concern:

Be it known that I, GEORGE MORLOT, of Paterson, in the county of Passaic and State of New Jersey, have invented a new and Improved Dyeing Apparatus for Woven Fabrics, of which the following is a full, clear, and exact description.

The invention relates to apparatus for dyeing woven fabrics in the piece.

The object of the invention is to provide a new and improved dyeing apparatus which is simple and durable in construction and permits of readily and conveniently passing the fabric stretched in its entire width through the dyeing-liquid, so as to evenly saturate the fibers with the liquid to insure perfect work without any streaks whatever.

The invention consists of certain parts and details and combinations of the same, as will be hereinafter fully described, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the improvement, and Fig. 2 is a sectional side elevation of the same on the line *xx* of Fig. 1.

The improved dyeing apparatus is provided with a frame A, adapted to be set with its lower part into a vat B, containing the dyeing-liquor. The frame A is connected at its upper part by chains C with a suitable hoisting mechanism for raising or lowering the said frame to set it into or to remove it from the vat B. The frame A is preferably constructed with an upper rectangular frame D and a similarly-constructed lower frame D', both being connected with each other by suitable posts E.

In the upper part D of the frame A is journaled a series of transversely-extending shafts F, arranged parallel to each other in a horizontal plane. Each of the shafts F supports between the side bars of the frame D a roller G, over which the fabric is adapted to pass. In the lower frame part D' are journaled similar shafts F', supporting rollers G', under which the fabric is passed, as is plainly illustrated in Fig. 2. As shown in the latter figure, the lower rollers G' are immersed in the dyeing-liquid in the vat E, while the upper

rollers G are in the open air. The shafts F extend to one side of the upper frame D, and each is provided at its outer end with a sprocket-wheel H, the several sprocket-wheels being connected with each other by a suitable endless sprocket-chain I, as is indicated in Fig. 1. On one of the shafts F is also secured a pulley J, connected by a belt K with suitable machinery, so as to impart a rotary motion to the particular shaft F, whereby all the shafts F are rotated in unison by the action of the sprocket-chain I and the sprocket-wheels H. Above the two end rollers G are arranged similar rollers N and N', secured on shafts L and L', respectively, mounted in suitable bearings erected on the upper part D of the frame A.

In order to tighten the fabric to be dyed, tightening-rollers O and O' are employed, located above the rollers G and between the end rollers N and N', as is indicated in Fig. 2, the said rollers O and O' being adapted to engage the fabric on the upper side. The tightening-rollers O and O' are secured on shafts P and P', respectively, mounted to turn in bearings P², fitted to slide vertically in brackets D², erected on the side rails of the upper frame D. The bearings P² are engaged by screw-rods Q and Q', respectively, mounted to turn in the said brackets D², and serve to raise and lower the bearings and consequently the rollers O and O' to tighten the fabric to be dyed. Between these two tightening-rollers O and O' is arranged a third tightening-roller R, adapted to engage the fabric on the under side, as is illustrated in Fig. 2. This roller R is secured on a shaft S, also mounted to turn in bearings P³, fitted to slide vertically in brackets D³, secured to the upper frame D. Screw-rods Q² are mounted to turn in the said brackets D³ and engage the said bearings P³, in order to raise and lower the roller R, so as to increase or diminish the degree of tightening of the fabric.

The operation is as follows: The woven fabric T is passed with one end first over one end roller G and then down under the first corresponding end roller G' in the lower frame part D'. From this first roller G' the fabric is passed upward and over the second roller G, then down and under the second roller G', then up again, and so on over the several up-

per and lower rollers alternately until the fabric passes over the last end roller G, to be then passed around the front of the roller N or N', then under the tightening-roller O or O', respectively, and over the tightening-roller R, then under the next following roller O or O', and over the front of the roller N or N', so as to meet the point of starting, at which point the ends T' of the fabric are fastened together by sewing and other means. The fabric to be dyed is thus formed into an endless belt stretched over and under the several rollers arranged in the frame A. The frame A is now set into the vat B by suitable mechanism, as is previously mentioned. Rotary motion is now imparted by the belt K to the upper set of rollers G, as is previously described, so that the fabric passing over the said rollers is caused to travel, and consequently in traveling under the rollers G' rotates the latter, as well as the rollers N N', O O', and R. The rollers N N' and the corresponding end rollers G may be fluted or corrugated, so that the fabric passing between the said sets of rollers is pressed on to establish the necessary tension in order to move the fabric forward over the several rollers, as is previously described.

The tightening-rollers O, O', and R are adjusted by means of their screw-rods Q, Q', and Q², respectively, to additionally insure a traveling movement of the fabric. The fabric is thus stretched throughout its entire width over the several rollers, and in moving from the upper rollers to the lower ones and from the latter to the upper ones the fabric passes through the dyeing-liquid in the vat A, and thus becomes impregnated with the dyeing-liquid and consequently dyed. It will be seen that in this manner the endless fabric may be passed as many times as necessary through the dyeing-liquid, so as to insure perfect dyeing of all the fibers in the fabric. As the fabric is stretched throughout its entire

width and passed over the revolving rollers G and G', all creases and streaks so frequently occurring in dyeing woven fabrics are avoided and a perfect even and uniform dyeing of the fabric is insured.

By imparting a rotary motion to the upper set of rollers all strain is taken off the fabric, so that the fabric travels easily, smoothly, and without undue stretching in any direction.

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

1. In a dyeing apparatus, a frame adapted to be placed in a vat, provided with brackets projecting from its upper side rails, a series of rollers mounted between the upper side rails of the frame, a series of rollers mounted between the lower side rails of the frame, rollers mounted in the frame above the end upper rollers, and tightening-rollers adjustably mounted in the brackets, substantially as described.

2. In a dyeing apparatus, the combination, with a frame and a series of rollers mounted in the upper and lower part of the frame, of the brackets D² D³, projecting from the frame, the tightening-rollers O O' R, mounted in bearings sliding in the said brackets, and the screw-rods Q Q' Q² for adjusting the bearings of the said tightening-rollers, substantially as and for the purpose set forth.

3. An apparatus for dyeing, comprising a vat, a frame adapted to rest in the vat, a series of rollers mounted in the upper part of the frame, a series of rollers in the lower part of the frame, a roller mounted above each end roller of the upper series of rollers, and tightening-rollers adjustably mounted in the frame above the upper series of rollers, substantially as herein shown and described.

GEORGE MORLOT.

Witnesses:

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