

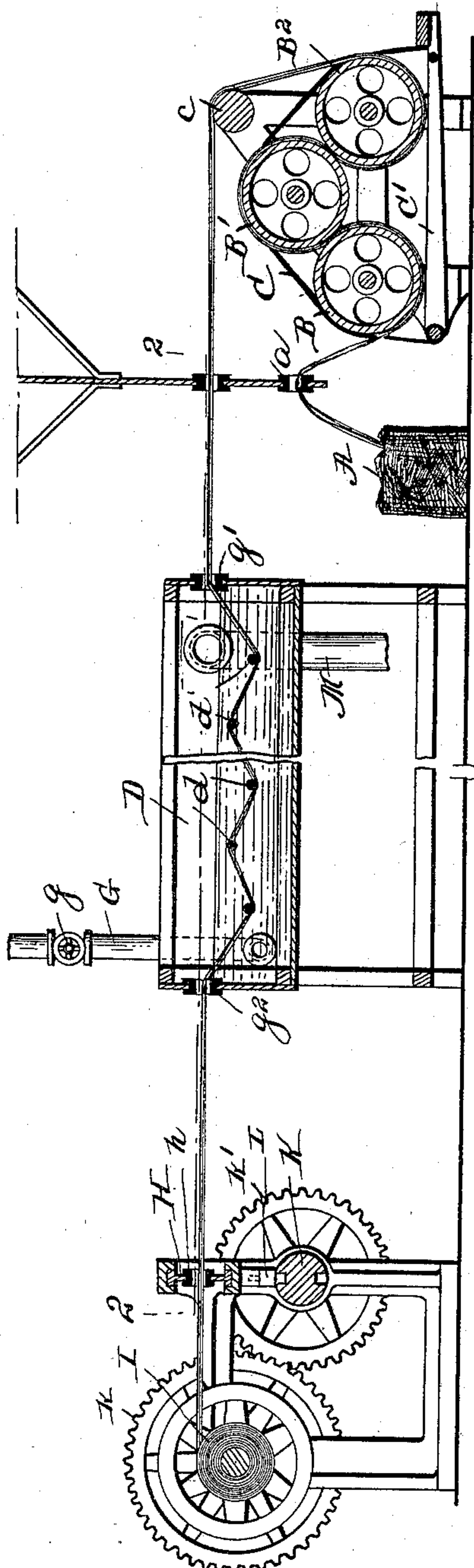
No. 608,194.

Patented Aug. 2, 1898.

J. T. GREENWOOD.
MERCERIZING APPARATUS.

(Application filed Oct. 18, 1897.)

(No Model.)



WITNESSES:

Jesse B. Heller.
M. H. Ellis.

Fig. 1-

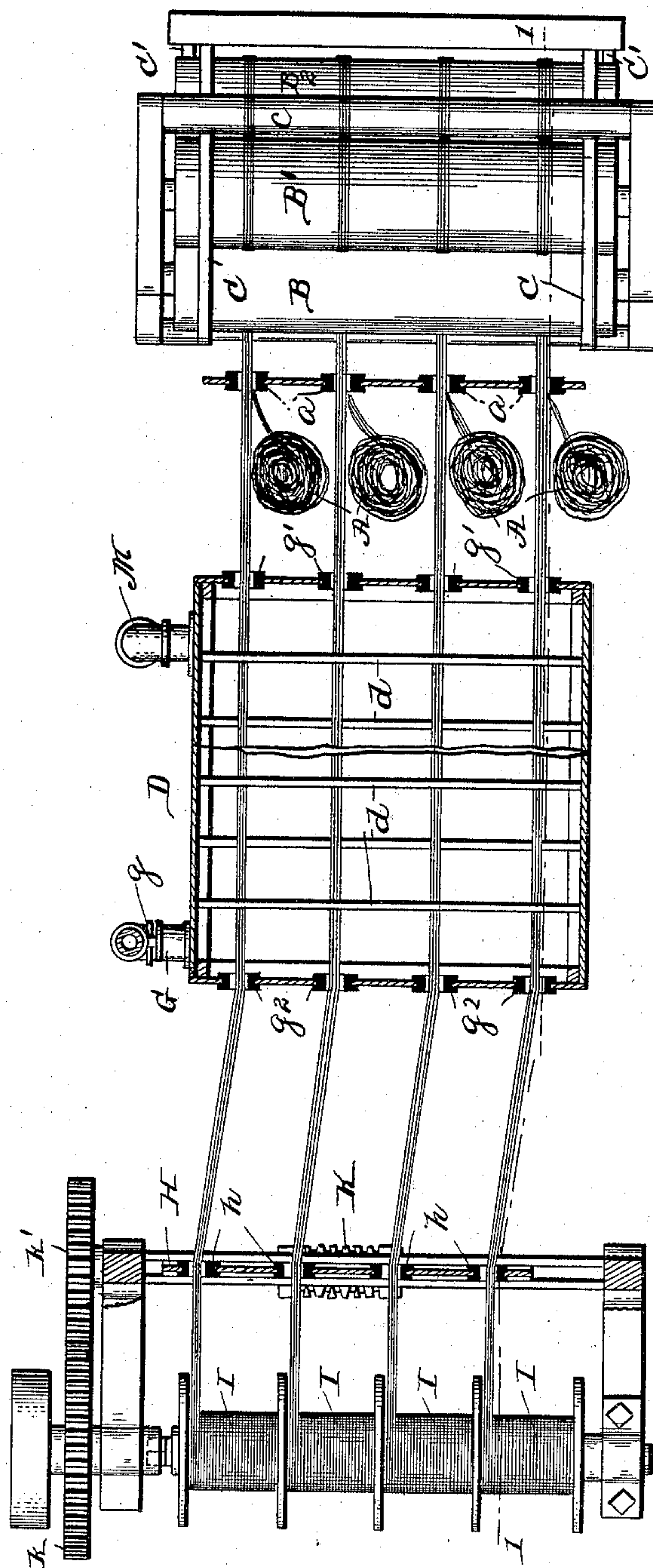


Fig. 2-

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JOHN T. GREENWOOD, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO HIMSELF, DANIEL R. GREENWOOD, HORACE T. GREENWOOD, AND WILLIAM BAULT, OF SAME PLACE.

MERCERIZING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 608,194, dated August 2, 1898.

Application filed October 18, 1897. Serial No. 655,552. (No model.)

To all whom it may concern:

Be it known that I, JOHN T. GREENWOOD, a citizen of the United States, residing at Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Apparatus for Preparing Warp for Dyeing, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

It is known that if vegetable fiber be treated or subjected to the action of strong alkali (caustic soda) the fiber becomes changed, so that it has a greater affinity for the dye, and also its structure is changed, so as to make it finer in texture. This treatment with alkali, however, causes a certain shrinkage of the yarn, generally about one-third. This is caused by the excess of alkali. Generally speaking, this is cured by restretching the material when in a wet condition and simultaneously therewith removing the excess of alkali, whereby the material is first brought to its original length, and when so stretched the excess of alkali is removed therefrom, and it is maintained in its stretched condition until it is set. Subsequently it is treated by the dye.

My invention has for its object the production of an apparatus whereby the warp or yarn after having been subjected to this alkali is brought back to its original length and the excess of alkali removed and the warp or yarn maintained stretched until it is set.

Speaking generally, it consists of a tension device, a warp-beam, and intermediate there-to a tank or washing device, the warp or yarn passing around the tension device, through the tank or washing device, onto the warp-beam, so that by the movement of the warp-beam the yarn from a coil is drawn around the tension device, through the washing device, and onto the warp-beam, and is maintained in its passage through the washing-machine under a tension and upon the warp-beam under tension until it is set.

In the drawings, Figure 1 is a section on the line 1 1, Fig. 2. Fig. 2 is a section on the line 2 2, Fig. 1.

A A A A are a series of coils of warp.

B B' B² are a series of tension-rollers, the desired tension being placed upon them by means of a strap C and lever C'. The warp passes from the coil A through the guides *a*, around the under side of the roller B², over the guide-roller *c*, to the tank or washing-machine D. This washing-machine consists of a tank provided with a series of rods *d*, running from side to side of the machine.

G is a water-inlet pipe connected with a suitable source of water-supply and having the inlet-cock *g*, and M is an escape-pipe for the water from the tank, so that it passes through the tank continuously.

The yarn from each of the coils passes in a staggered manner through the tank, interlacing with the rods *d*, passing over and under alternate rods, the rods being below the water-level in the tank. There is a guide *g'* at the entrance to the tank for each warp and a guide *g''* at the exit for each warp.

H is a cross-head having the guides *h*, equal in number to the warp, each warp passing through one of these guides and onto the rollers or spools I. The cross-head H is given a to-and-fro motion, so as to wind the warp symmetrically upon its corresponding roller or spool by the following means:

K is a worm having a double thread, as shown, which worm is rotated from the main driving-shaft by means of the gears *k k'*. L is a nut traveling upon this worm and which is connected with the cross-head H, so that in the rotation of the worm K the nut L is given a to-and-fro motion upon the worm, which is transferred to the cross-head H, so that the cross-head is given a motion to and fro to deliver the yarn symmetrically upon the roller or spool.

As may be seen from this described machine, the yarn passing from the coil A is given a tension upon the tension device composed of the roller B B' B² and is carried, under tension, through the tank or washing device, and in its passage therethrough it passes through water, wetting it thoroughly and washing out of it the excess of alkali, and is then wound upon the roller or spool, on which it is held, under tension, by the tension device until it is thoroughly set.

The rollers or spools I, as shown in the drawings, are warp-beams; but I do not intend to limit myself to this particular form of roller or spool; but it is preferable that the spools or rollers should be flanged to keep the yarn from too much lateral play, and there should preferably be provided means to wind it symmetrically upon the spool or roller.

10 I have described this machine as used with warp. If yarn were to be treated, the only difference would be that in place of single threads or coils of threads the hank or skein would be passed over the tension device, 15 through the tank, and onto the beam, the skeins being preferably linked together to form a sufficient length.

Having now fully described my invention, what I claim, and desire to protect by Letters 20 Patent, is—

1. In a machine for treating warp or yarn after treatment with alkali, in combination, a roller or spool, a tension device, a tank provided with water between the tension device 25 and roller or spool, and suitable guides adapted to lead the warp or yarn over the tension device, through the tank, and onto the roller or spool, the warp or yarn being moved by the roller through the tank and wound upon itself 30 against the action of the tension device.

2. In a machine for treating warp or yarn after treatment with alkali, in combination, a roller or spool, a tension device, a washing-tank between the tension device and the roller 35 or spool, rods submerged in said tank, and suitable guides adapted to lead the warp or yarn over the tension device, through the washing-tank, and onto the roller or spool,

said warp or yarn being interlaced with the rods, the warp or yarn being moved by the roller through the tank and wound upon itself 40 against the action of the tension device.

3. In a machine for treating warp or yarn after treatment with alkali, in combination, a roller or spool, a tank adapted to contain 45 water through which the warp or yarn is adapted to pass, said warp or yarn being adapted to be wound on the roller or spool, and a tension device adapted to maintain the warp or yarn under tension while passing through the 50 tank and being wound on the roller or spool.

4. In a machine for treating warp or yarn after treatment with alkali, in combination, a roller or spool, a tank adapted to contain 55 water through which the warp or yarn is adapted to pass, said warp or yarn being adapted to be wound on the roller or spool, and a tension device adapted constantly to maintain the warp or yarn under tension while passing 60 through the tank and upon the spool or roller.

5. In a machine for treating warp or yarn after treatment with alkali, in combination, a roller, or spool, a tank adapted to contain 65 water, through which the warp or yarn is adapted to pass, said warp or yarn being adapted to be wound on the roller or spool, and a tension device adapted to maintain a constant tension upon the warp or yarn while 70 passing through the tank and on the roller or spool.

In testimony of which invention I have hereunto set my hand.

JOHN T. GREENWOOD.

Witnesses:

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M. F. ELLIS.