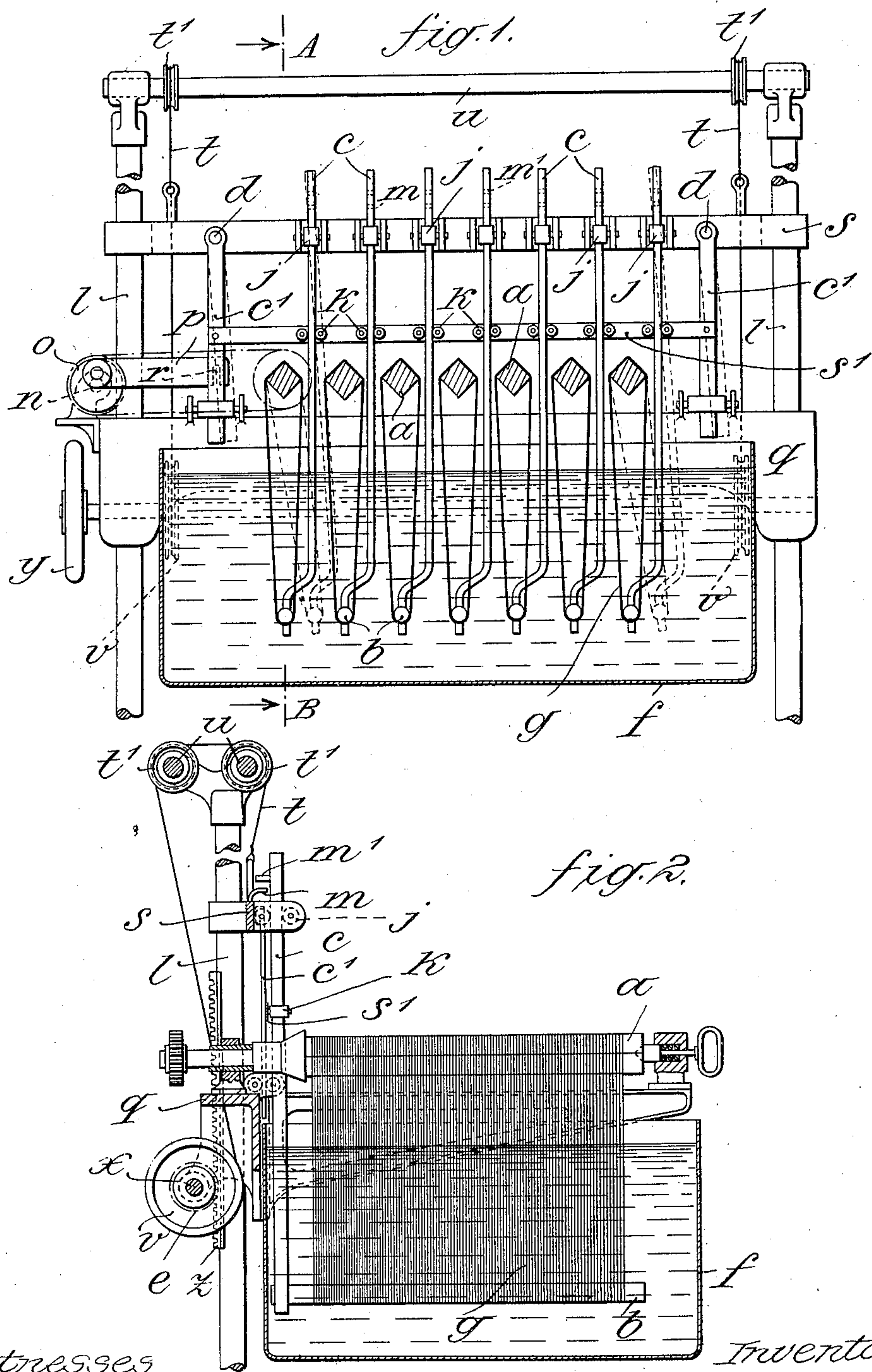


No. 793,594.

PATENTED JUNE 27, 1905.

O. KUNZ.
DYEING APPARATUS.
APPLICATION FILED JAN. 31, 1905.



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DYEING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 793,594, dated June 27, 1905.

Application filed January 31, 1905. Serial No. 243,549.

To all whom it may concern:

Be it known that I, OTTO KUNZ, manufacturer, a subject of the Emperor of Austria-Hungary, residing at No. 1 Gfrornergasse, Vienna, VI, Austria-Hungary, have invented new and useful Improvements in Dyeing Apparatus, of which the following is a specification.

My invention relates to improved apparatus for dyeing textile fibers, and more particularly silk yarns, of that type in which the skeins hang from rollers which rotate with alternating motion.

The essential feature of the invention is the arrangement of laterally-swinging rods or bars which enter the skeins and prevent the threads becoming entangled no matter how close they may lie together and which, furthermore, cause a swinging motion of the skeins in the dye-bath. In this manner every thread will be thoroughly saturated with liquor. A special device is also provided for enabling the dyed skeins to be readily lifted out and new ones inserted.

One embodiment of my invention is shown in the accompanying drawings, in which—

Figure 1 is a front elevation and part section of the apparatus, and Fig. 2 a section on the line A B of Fig. 1.

g represents the skeins, which hang in well-known manner on rotary rollers *a*.

b represents small rollers or rods which enter the skeins and are carried by the bars *c* in such manner that each skein is under the direct influence of the weight of a bar *c* and rod *b*. The rods *b* are vertically adjustable and can also swing laterally. For this purpose the bars *c* are guided by small rollers *j*, mounted on the rails or bars *s s'*. The bar *s'* is secured to the pendent vibrating arms *c'*, pivoted at *d* to the bar *s*. The rods *b* can be swung into the dotted-line position, Fig. 1, by means of an eccentric *o*, to which is secured an arm *p*, the other end of which engages with a pin *r* on one of the pendent arms *c'*.

The entire apparatus can be lifted out of the dye-beck *f* by means of devices which will now be described.

The bar *s*, carrying the rollers *j*, works up and down on stationary pillars *l* and is sus-

ended by means of chains or cords *t*, passing over pulleys *t'*, mounted on the shaft *u*. The other ends of the chains *t* are attached to the larger pulleys *v*, mounted on a shaft *x*, provided with a hand-wheel *y*. The bar *s* is provided with suitable pins or projections *m*, co-operating with projections or pins *m'* on the bars *c*. Mounted on the shaft *x* are also the pinions *e*, (only one of which is shown in the drawings,) which mesh with the racks *z*, secured to the backs of the pillars *l*. The skein-carrying rollers *a* are mounted in bars on the frame *q*, in which the shaft *x* is likewise mounted. The frame can thus be reciprocated up and down on the pillars *l*. If now the hand-wheel *y* is turned so as to cause the frame *q* to rise with the rollers *a*, the pins *m m'* will engage and the rollers *a* and rods *b* will be lifted. This elevation of the rods *b* will be faster than that of the rollers *a*, so that during removal of the whole apparatus the rods *b* will approach the rollers *a*, whereby the removal of the dyed skeins and the insertion of fresh ones is greatly facilitated.

The operation of the apparatus is as follows: To immerse the skeins in the bath, it is only necessary to turn the hand-wheel *y* until the entire apparatus is raised, so that the rods or rollers *b* (which, as already remarked, rise quicker than the rollers *a*) closely approach the rollers *a*. The skeins have then to be pushed over the rollers *a* and the rods *b*, whereupon the hand-wheel *y* must be turned in the reverse direction, so that the entire apparatus descends until the skeins are sufficiently deeply immersed in the bath. In this position the rods *b* will impart adequate tension to the skeins without there being any danger of the threads of the yarn breaking. The machine can now be started working. On completion of the dyeing operation the wheel *y* must be again turned to raise the apparatus with the dyed skeins from the liquor. The skeins can now be removed and fresh ones hung on the rollers *a*, &c.

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

1. In dyeing apparatus for textile fibers and the like, having rotary skein-carrying rollers located above the dye-beck, in combination,

rods resting on the bottom of the skeins, arms attached to the said rods, means for supporting the arms, and means for imparting a to-and-fro swinging motion to them, substantially as described.

2. Indyeing apparatus for textile fibers and the like, having rotary skein-carrying rollers located above the dye-beck, in combination, rods resting on the bottom of the skeins, arms attached to the said rods, means for supporting the arms, means for imparting a to-and-fro swinging motion to them, and means for lifting them, substantially as described.

3. A dyeing apparatus for textile fibers and the like, comprising in combination, a dye-beck, rotary skein-carrying rollers located above the same, a frame supporting the rollers, a shaft mounted in the frame, pulleys

and pinions on the shaft, vertical-racked pillars with which the pinions mesh, rods resting on the bottom of the skeins, arms attached to said rods, a bar sliding vertically on the pillars and lifting the said arms on rising, pulleys carried by the pillars, flexible means passing over these pulleys and connecting the pinion-shaft pulleys with the sliding bar, means for rotating the pinion-shaft, and means for vibrating the said skein-rods, substantially as described.

In witness whereof I have hereunto signed my name, this 9th day of January, 1905, in the presence of two subscribing witnesses.

OTTO KUNZ.

Witnesses:

HARRY BELMONT,
ALVESTO S. HOGUE.