

(No Model.)

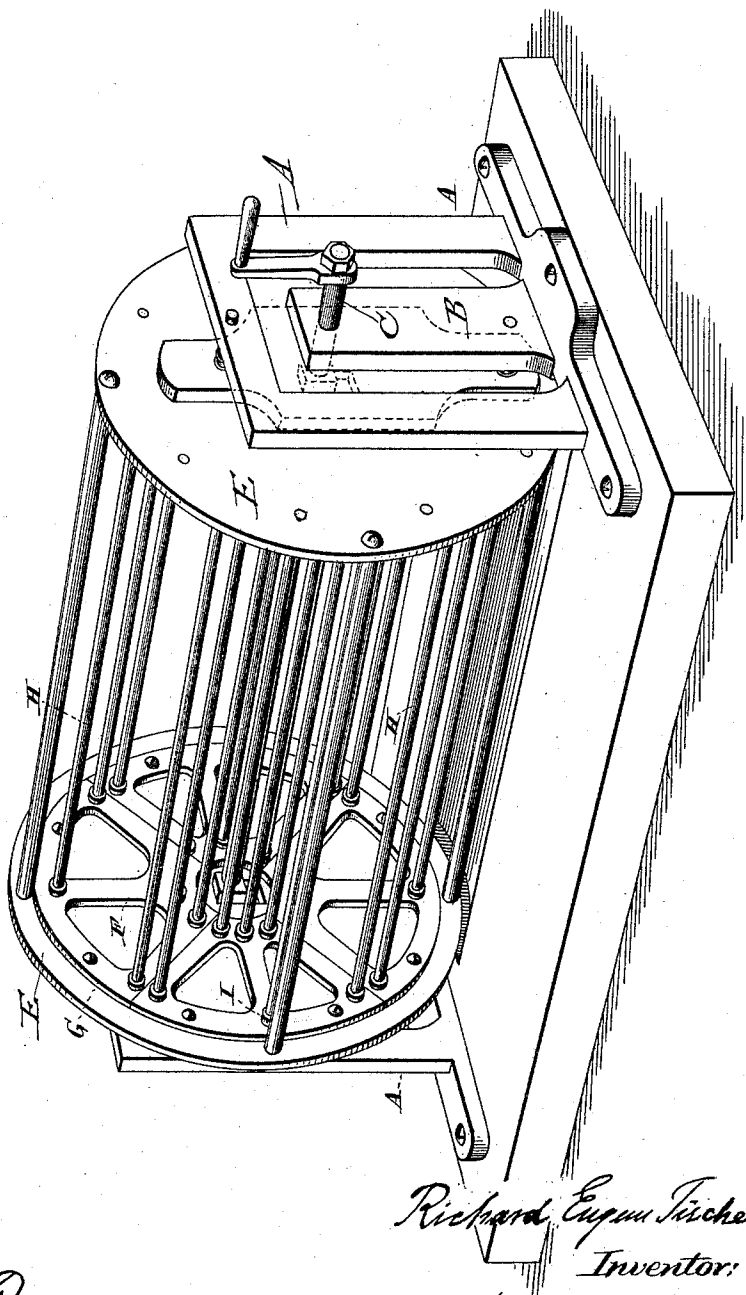
3 Sheets—Sheet 1.

R. E. FISCHER.
ROTARY DRYING MACHINE.

No. 474,005.

Patented May 3, 1892.

Fig. 1.



Witnesses:

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(No Model.)

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Fig. 2.

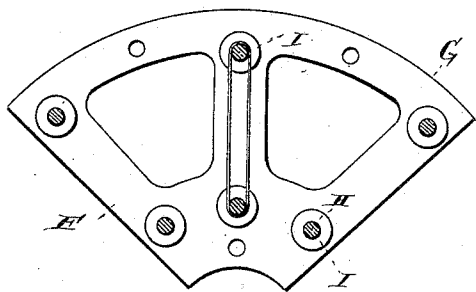


Fig. 3.

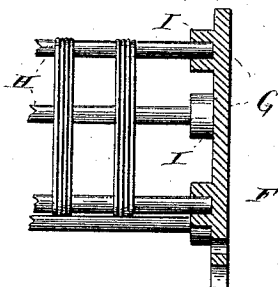


Fig. 4.

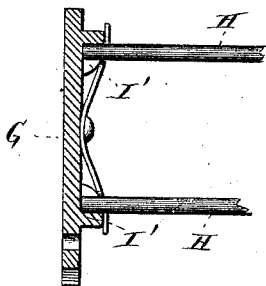


Fig. 5.

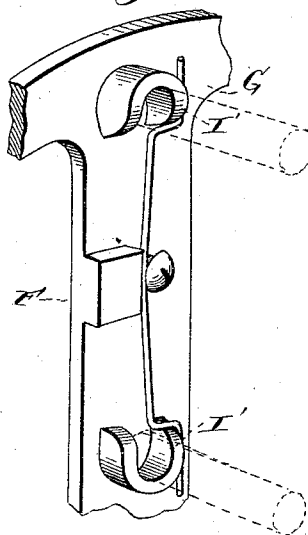


Fig. 6.



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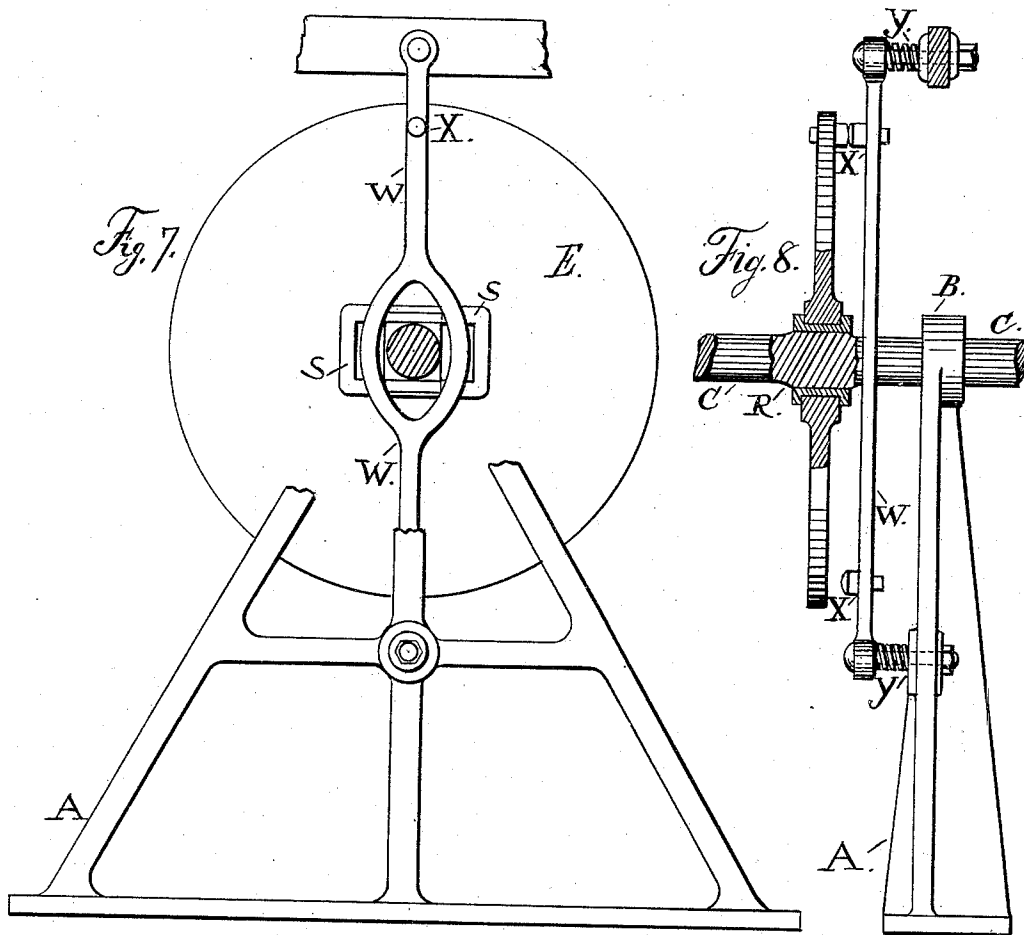
(No Model.)

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Patented May 3, 1892.



WITNESSES:

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UNITED STATES PATENT OFFICE.

RICHARD EUGENE FISCHER, OF BALTIMORE, MARYLAND.

ROTARY DRYING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 474,005, dated May 3, 1892.

Application filed October 15, 1890. Serial No. 368,246. (No model.)

To all whom it may concern:

Be it known that I, RICHARD EUGENE FISCHER, a subject of the Emperor of Germany, residing in the city of Baltimore, State of Maryland, have invented a new and useful Rotary Dyeing-Machine for Oxidizing and Setting Fast-Black Dye on Cotton and Cotton-Mixed Yarn, of which the following is a specification.

My invention relates to improvements in mechanisms for dyeing yarns of cotton or cotton-mixed material in which I rapidly set or oxidize fast-black color at a low temperature, thereby securing a perfectly glossy black dye to the goods without injuring the material used and insuring its not fading. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the entire machine, shown in perspective. Fig. 2 is a detailed drawing, showing one of the iron sectors detached. Fig. 3 is a sectional view of one of the iron sectors, showing two of the wood sticks (or metal pipes) broken off, with their ends in the fixed sockets provided for them. Fig. 4 is also a sectional view of one of the sectors belonging to the opposite side of the machine, showing the ends of the sticks placed in slots instead of sockets. Fig. 5 represents part of the web portion of one of the sectors, Fig. 4, with the slot to receive the end of the wood stick or pipe and the pliable spring-rod, with offsets covering the slot in the socket shown in perspective. Fig. 6 is a detailed perspective view of the pliable spring-rod, with offset covering the slot in the socket. Fig. 7 is an end elevation showing one of the A-frames with its knocker-arm and end view of one of the centers, showing slot or guide and square block forged on the shaft. Fig. 8 shows a side elevation of the frame and knocker-arm and the center disk, shown partly in sections.

Similar letters refer to similar parts throughout the several figures.

Referring to Fig. 1, A and A are iron or wooden frames or stands giving support to the bearings B B, which receive bearings for the horizontal shaft C to revolve in. At the outer end of this shaft a pulley D is attached, and by means of a band revolves the shaft C. Two disks E are held in place on the shaft C, inside

of the bearings at each end, and have attached to them eight (more or less) sectors of cast-iron or other material F, which are provided with pockets I I on their inner face, as shown on Figs. 3 and 4. These pockets are made for the reception of the ends of the wooden sticks or pipes, and while those on one side have the sockets to completely surround their ends, so they cannot be withdrawn laterally, as shown in Fig. 3, those on the other side, Fig. 4, have a segment of the surrounding ring left open, the said opening being closed by a spring-rod provided with an offset covering the open part of the socket, and thus holding in place the sticks until it is desired to remove them, when by pushing the spring to one side the stick is released.

Dyed yarns or other material is placed over a pair of the sticks, as shown in Figs. 2 and 3. The machine is then started to revolve in its bearings at a moderate rate of speed, producing by its rotary motion a current of air having the effect, by constantly circulating and changing the condition of the atmosphere surrounding the dyed material, to rapidly and effectively set and oxidize the liquid dye without heating the fabric above the temperature of the surrounding atmosphere, and at the same time depriving the material of all moisture, the latter being absorbed and carried off by the current of air. The application of heat for oxidizing fast-black dyes is not allowable above a temperature of 100°, owing to the deleterious effect of higher heat on some of the chemicals used in dyeing and oxidizing fast black, hence the great utility and importance of the invention hereinbefore described. It is also proposed to give the reel a lateral movement, so as to produce a slightly vibratory motion while rotating in its circular path. This is accomplished by providing a rectangular slot in the head or disks, in which a block forged solid on the shaft passes and is confined, thus permitting a slightly reciprocating movement to the disks and the entire reel while revolving in the shaft-bearings and without varying the length of the belt operating the shaft, the latter having a stationary axis.

The vibrating or reciprocating movement of the disks about the shaft-blocks is produced by a rounded projection placed on the outer

face of the disks, and in the course of their rotation caused to come in contact with corresponding projections on an upright arm W. (Shown at X.) At opposite points on this arm
5 stud-bolts are placed, securing it to the stationary frame-work, and springs (shown at Y) are provided to react and throw the arm forward after it has been pushed back by the projections on the disks before referred to. So
10 it will be seen from the foregoing that at each half-revolution of the reel the opposing projections come in contact and cause a sudden vibrating action on the apparatus, causing the yarns attached to the poles to be violently
15 shaken, thus disengaging all loose and superfluous liquid and thereby hastening the operation.

Having fully described my invention, what

I claim, and desire to secure by Letters Patent, is—

The combination, in rotary machines for setting and oxidizing fast-black dye on cotton or cotton-mixed yarns, of a rotary shaft carrying fixed rectangular blocks, a reel mounted thereon and having slotted heads or disks fitting and moving on said blocks, projections on the outer face of said disks, the knocking-arms having projections thereon which on revolution of said reel come in contact with the projection on said disks, whereby diametrical vibrating motion is caused in said reel, substantially as described.

RICHARD EUGENE FISCHER.

Test:

FELIX R. SULLIVAN,
WM. R. BANY.