

No. 685,699.

Patented Oct. 29, 1901.

J. H. STEADWELL.
DYEING MACHINE.

(Application filed May 16, 1901.)

(No Model.)

2 Sheets—Sheet 1.

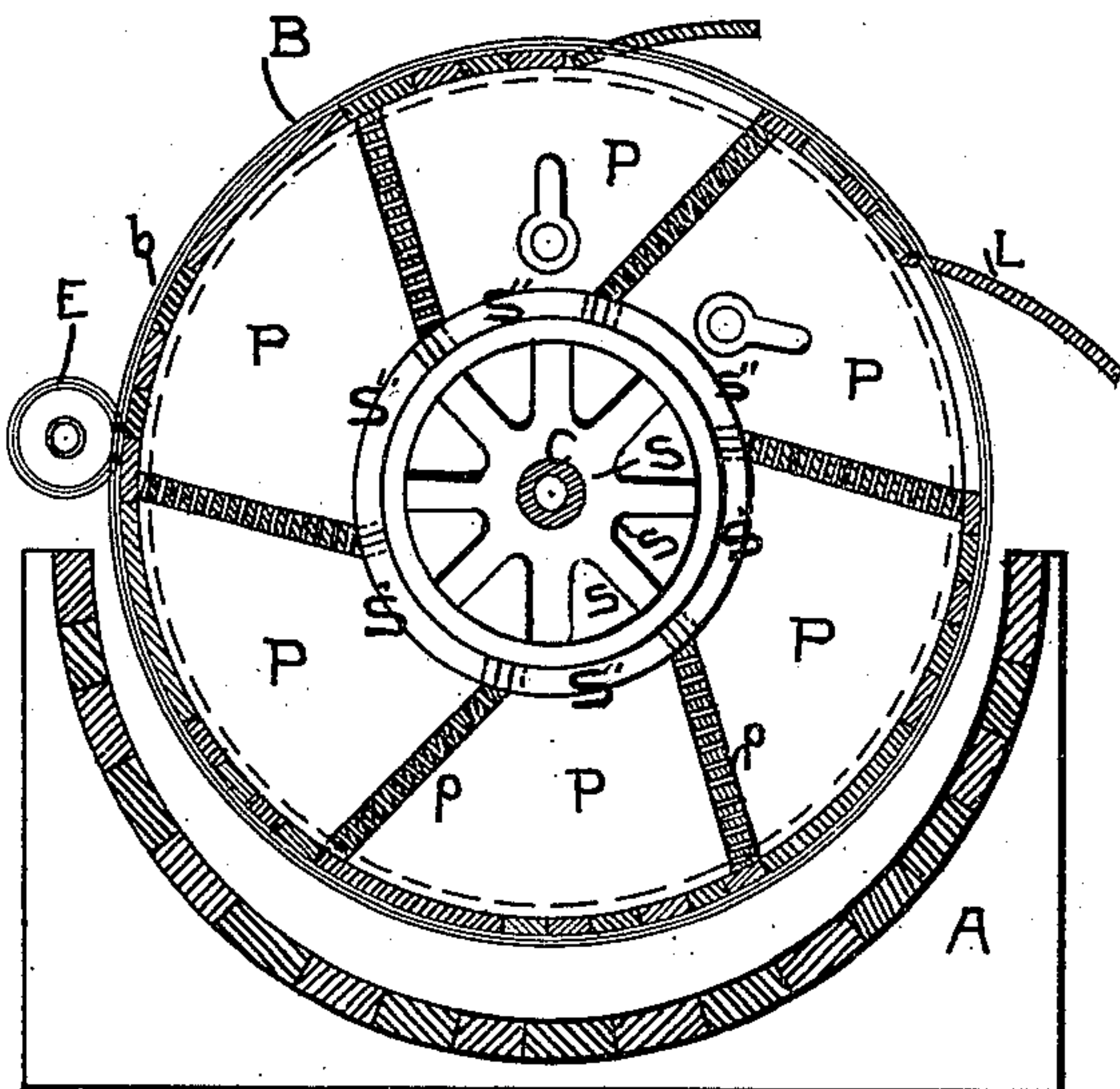


Fig. 1.

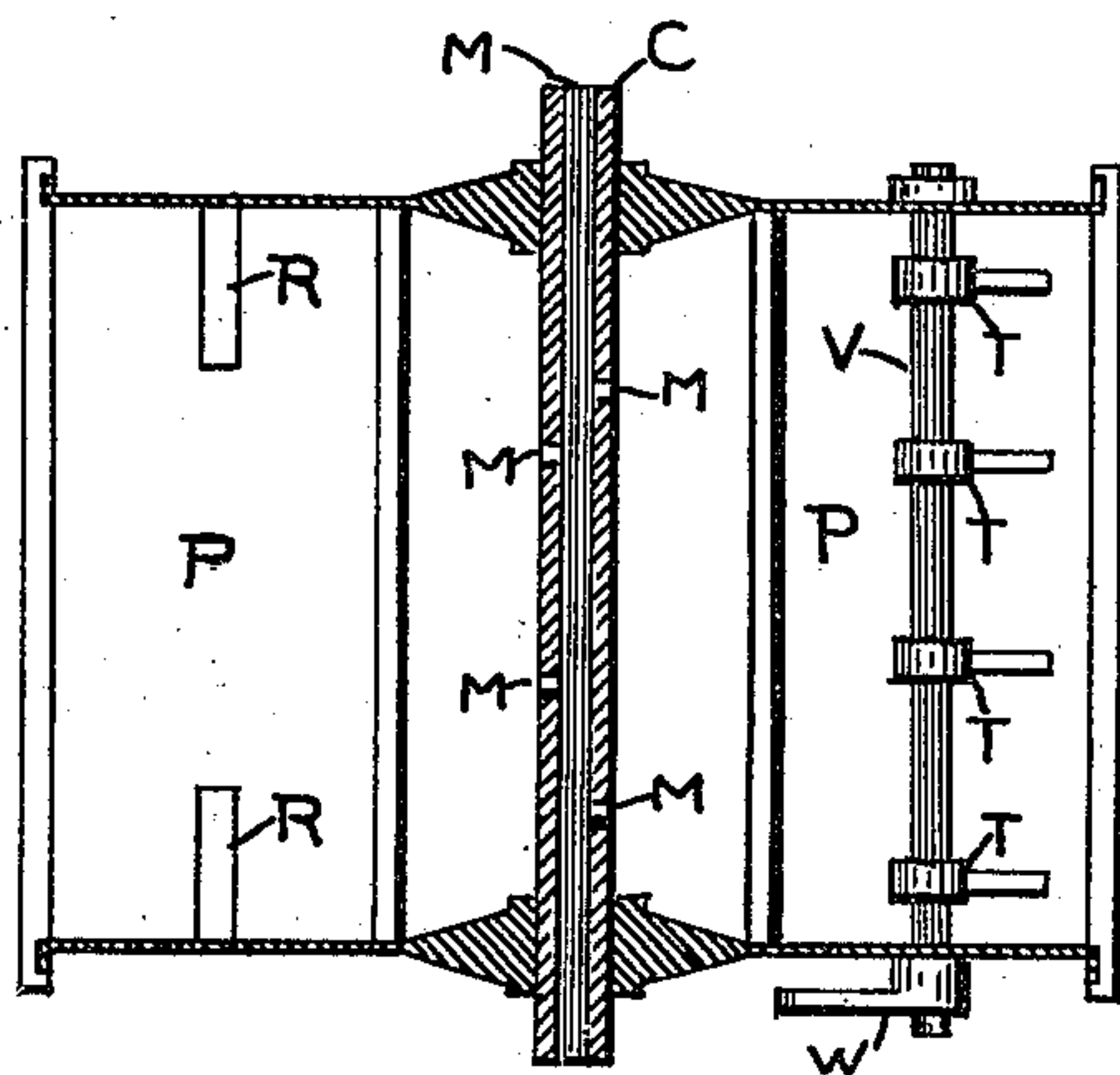


Fig. 2.

Witnesses
Jessie Guardenier
Lottie Prior.

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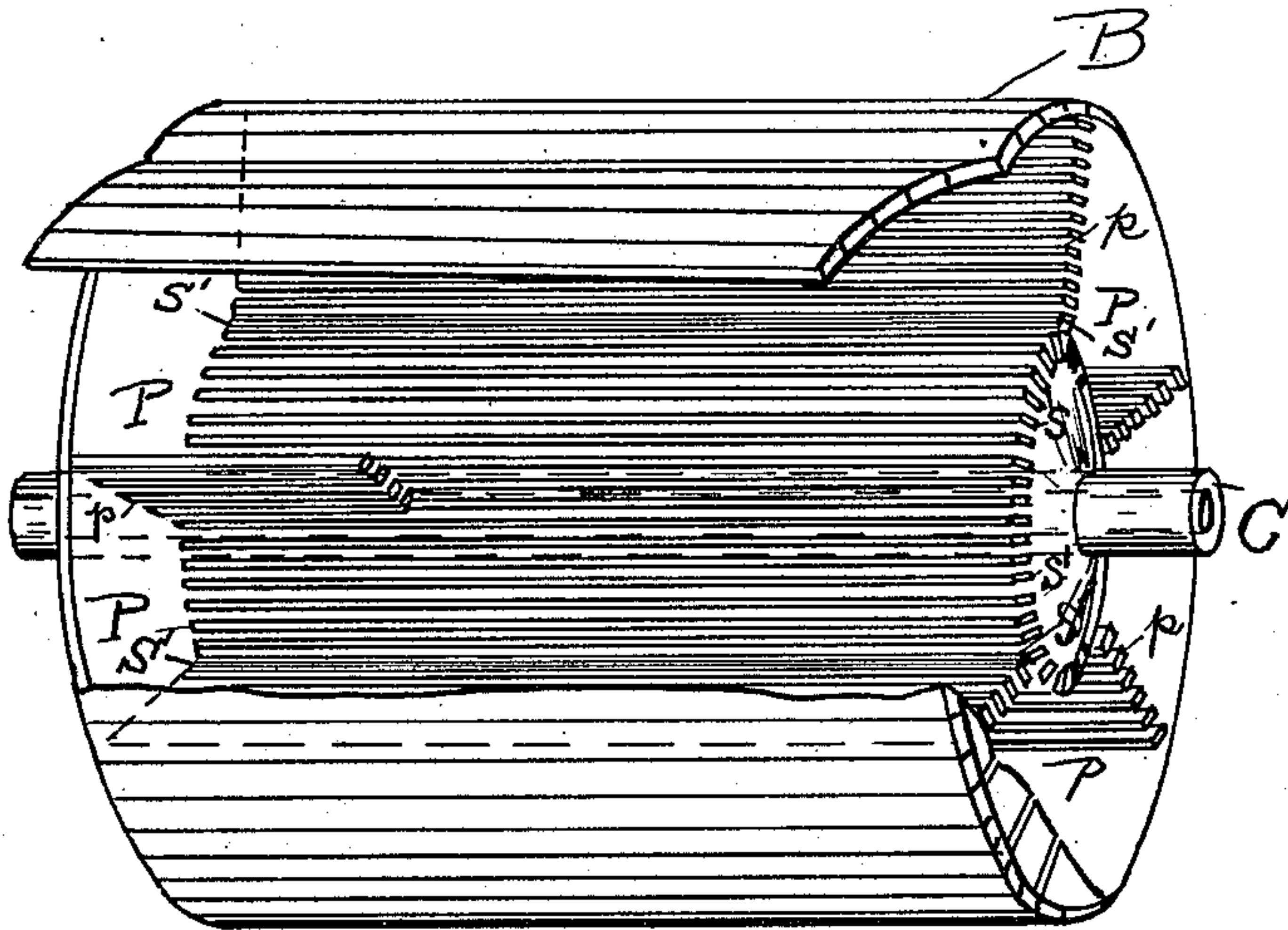


Fig. 3

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Lottie Prior.

Jessie Guardenier.

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UNITED STATES PATENT OFFICE.

JOHN H. STEADWELL, OF AMSTERDAM, NEW YORK, ASSIGNOR TO
STEADWELL DYEING MACHINE CO., A CORPORATION OF NEW
YORK.

DYEING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 685,699, dated October 29, 1901.

Application filed May 16, 1901. Serial No. 60,559. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. STEADWELL, a citizen of the United States of America, and a resident of the city of Amsterdam, county of Montgomery, State of New York, have invented certain new and useful Improvements in Dyeing-Machines, of which the following is a specification.

My invention relates to dyeing-machines; and the object of my invention is to provide an apparatus by the operation of which the stock placed in the cylinder to be dyed will be prepared for receiving the dyeing fluid and quickly and thoroughly brought in contact with the dye and all parts of the contents of the cylinder permeated with the dye liquor and uniformly colored. I accomplish this object by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is an elevation; Fig. 2, a section. Fig. 3 is a perspective view with parts broken away.

Similar letters refer to similar parts throughout the several views.

A represents a vat or receptacle within which is placed the dye liquor. I mount a cylinder B upon, preferably, a hollow shaft C, the cylinder arranged to revolve partially within the vat A. On the cylinder is preferably placed a gear-rack *b*, with which engages a suitable pinion E, to which power may be applied and by the operation of which the cylinder may be given a slowly-revolving motion on the shaft C. I do not, however, limit myself to this means for revolving the cylinder. Within the cylinder B, I arrange a series of pockets P P. These pockets are of any suitable shape, preferably arranged with a perforated partition *p* between the adjoining pockets. The periphery of the cylinder, and therefore of each pocket, is closed solid during the operation of the machine. Also the sides of the cylinder are closed. The side of the pockets toward the center of the cylinder is provided with slotted or perforated openings, allowing the dye liquor in the vat to enter the pocket therethrough when the pockets are beneath the surface of the liquor in the vat. The projections S' along the sides adjacent to the openings S allow the liquor

to be carried up by the operation of the machine and then, when in an elevated position, causing the fluid to soak through the contents of the pocket, the projections S' acting, like buckets of a water-wheel, to scoop up the fluid in the vat and carry it out of the vat for use. I preferably arrange doors L in the periphery of the cylinder, which may be opened to allow the placing of the material to be treated into the pockets.

Through the opening M in the shaft C steam may be conveyed by means of suitable pipe, (not shown,) which steam passes through the openings S into the pockets for the treatment of the stock. The steam is turned on after the stock has been placed into the pockets and while the cylinder is revolving, allowing the stock to be thoroughly steamed. Then the liquor is turned into the vat and the stock opened by the steam is treated by the liquor, as described.

Stock which has been steamed will receive the dye matter much more quickly and retain the same more successfully than when treated without steam. By having the steam injected into the stock after the stock is placed into the pockets and it has been opened by the steam and while hot from the steaming is immersed into the vat the liquor operates much more effectively upon the goods and the goods are better prepared for carding. I do not, however, wish to limit myself to the use of the hollow shaft and the steam entering the cylinder-pockets therefrom, since I may deliver the steam by other means. By this arrangement of my device the wool or cotton stock or other material placed into the pockets after being prepared by steaming is brought in contact with the dye liquor entering from the center of the cylinder through the openings S and the force of gravity and the slowly-revolving cylinder cause the liquor to permeate the stock and reach the lowest point in the pockets. The slowly-revolving cylinder causes the liquor to pass through from one side to the other of the mass of material in the pocket and from one pocket to the other during the revolution of the cylinder, the liquor passing through the slotted or perforated openings S and through the perforated partitions *p*, and

by the time the cylinder has made a complete revolution every part of the contents of the pocket has been immersed in the liquor. There being no opportunity for the liquor to escape through the periphery or sides of the cylinder, a much more effective dyeing apparatus is attained than where perforations and openings are provided for the escape of the fluid, since by retaining it in the manner described herein it is made to immerse and permeate the contents of the pocket and pass from one pocket to another as the cylinder revolves, a constant stream of fluid passing along the central line of the cylinder out of some of the pockets through the opening S into others of the pockets through similar openings, giving free and rapid circulation.

Within the pocket are preferably arranged projections R R, extending from the end of each pocket toward the center, as shown in Fig. 2. I also arrange, preferably, a series of projections T T, mounted within the pocket on a rod V, which rod extends longitudinally through the pockets from end to end and is preferably provided at one end with a locking-crank W. By this arrangement I can by operating the crank W adjust the projections T to such angle as is desired. The use of the projections R and T is to break up the continuity of the stock within the pocket during the revolution of the cylinder.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A device for dyeing, consisting of a vat containing dyeing liquor; a cylinder mounted to rotate partially within said vat; a series of pockets arranged longitudinally of said cylinder; the periphery and ends of said cylinder, when in operation, closed and unperforated; a means for conveying the liquor from the vat into the pocket from the side of the pockets toward the axis of the cylinder, which side of the pocket is below the surface of the liquor in the vat, when the pocket is, in the revolution of the cylinder, at its lowest point; substantially as described.

2. A machine for dyeing, consisting of a vat containing dyeing liquor; a cylinder adapted to rotate partially within said vat; a means for causing said cylinder to rotate; a series of pockets arranged longitudinally within said cylinder; the periphery and ends of said cylinder unperforated and closed during the revolution of the cylinder; a means for allowing

the liquor within the vat to enter each pocket from the side of the pocket toward the axis of the cylinder when the pocket has reached the lowest point, in the revolution of the cylinder, within the vat; adjustable projections in the pockets mounted on a spindle, a locking device on the end of each spindle exterior to the cylinder.

3. A dyeing-machine, consisting of a vat containing dyeing liquor; a cylinder mounted to rotate partially within said vat; a means for causing said cylinder to rotate; a series of pockets arranged longitudinally in said cylinder; said cylinder closed along its periphery and ends when in operation; and provided with a central longitudinal opening from end to end; said pockets communicating with said opening through said cylinder; a hollow shaft upon which said cylinder is mounted, adapted to carry steam, with means for injecting said steam into the pockets of said cylinder, substantially as described.

4. A dyeing-machine consisting of a vat containing dyeing liquor; a cylinder mounted to rotate partially within said vat; a series of pockets in said cylinder; the ends and periphery of said cylinder closed during the revolution thereof; a means for conveying steam into said cylinder; perforated partitions between adjoining pockets; a means for conveying the contents of the vat to the pockets through openings in the sides of the pockets communicating with a central longitudinal opening through the cylinder from end to end, substantially as described.

5. A dyeing-machine; a vat; a cylinder; a series of longitudinal pockets arranged in said cylinder; said cylinder during its revolution closed along its periphery and ends; said cylinder provided with a longitudinal central opening from end to end therethrough; said pockets communicating with said longitudinal central opening by means of perforated or slotted partitions; a projection in the pocket adjacent to said slotted or perforated opening adapted to carry fluid into the vat; a means for conveying steam into said cylinder, substantially as described.

Signed at Amsterdam, New York, this 4th day of May, 1901.

JOHN H. STEADWELL.

Witnesses:

EDWARD P. WHITE,
JAMES A. LAIR.