

(No Model.)

2 Sheets—Sheet 1

L. WELDON.  
DYEING APPARATUS.

No. 354,281.

Patented Dec. 14, 1886.

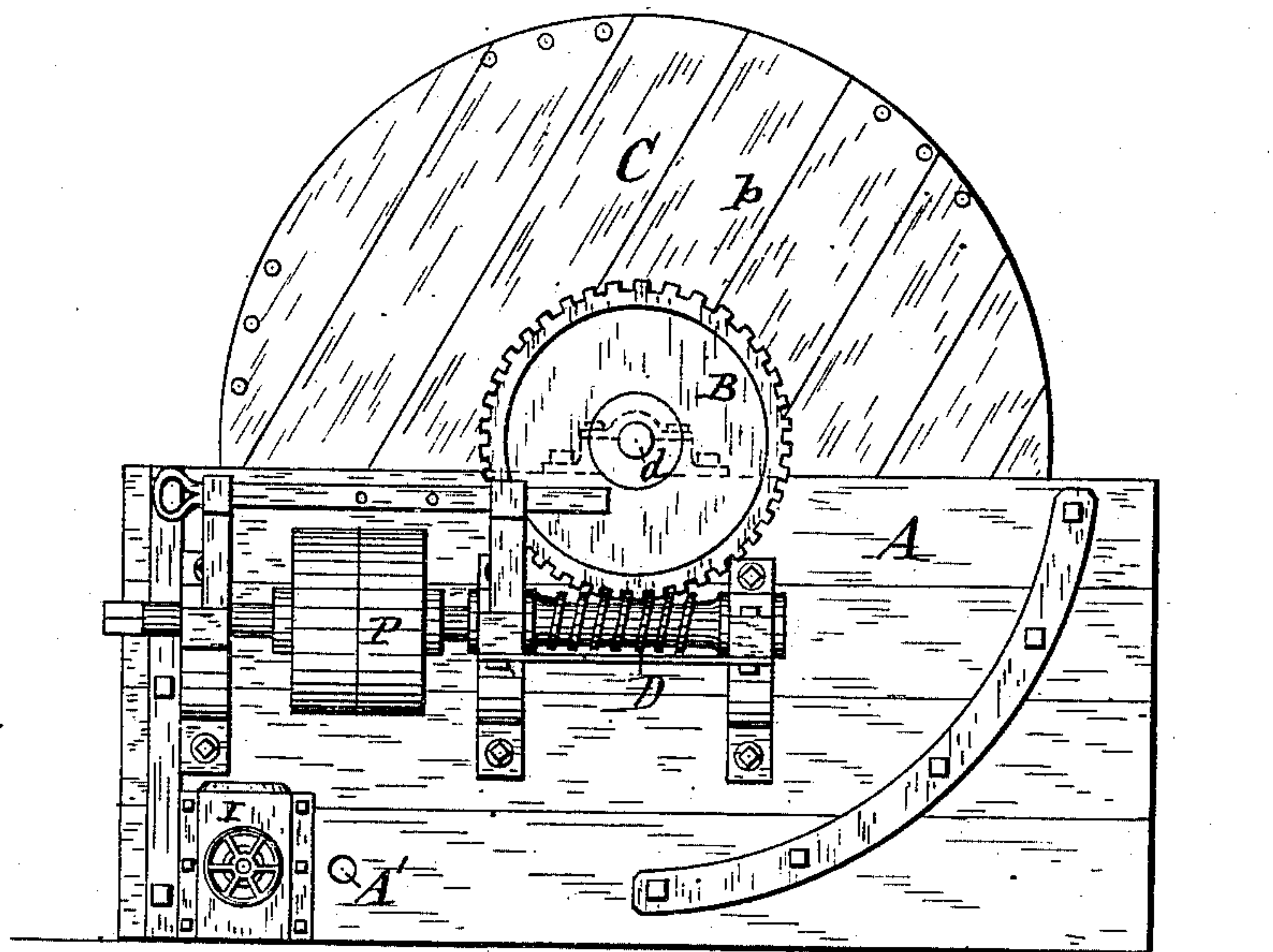


Fig. 1.

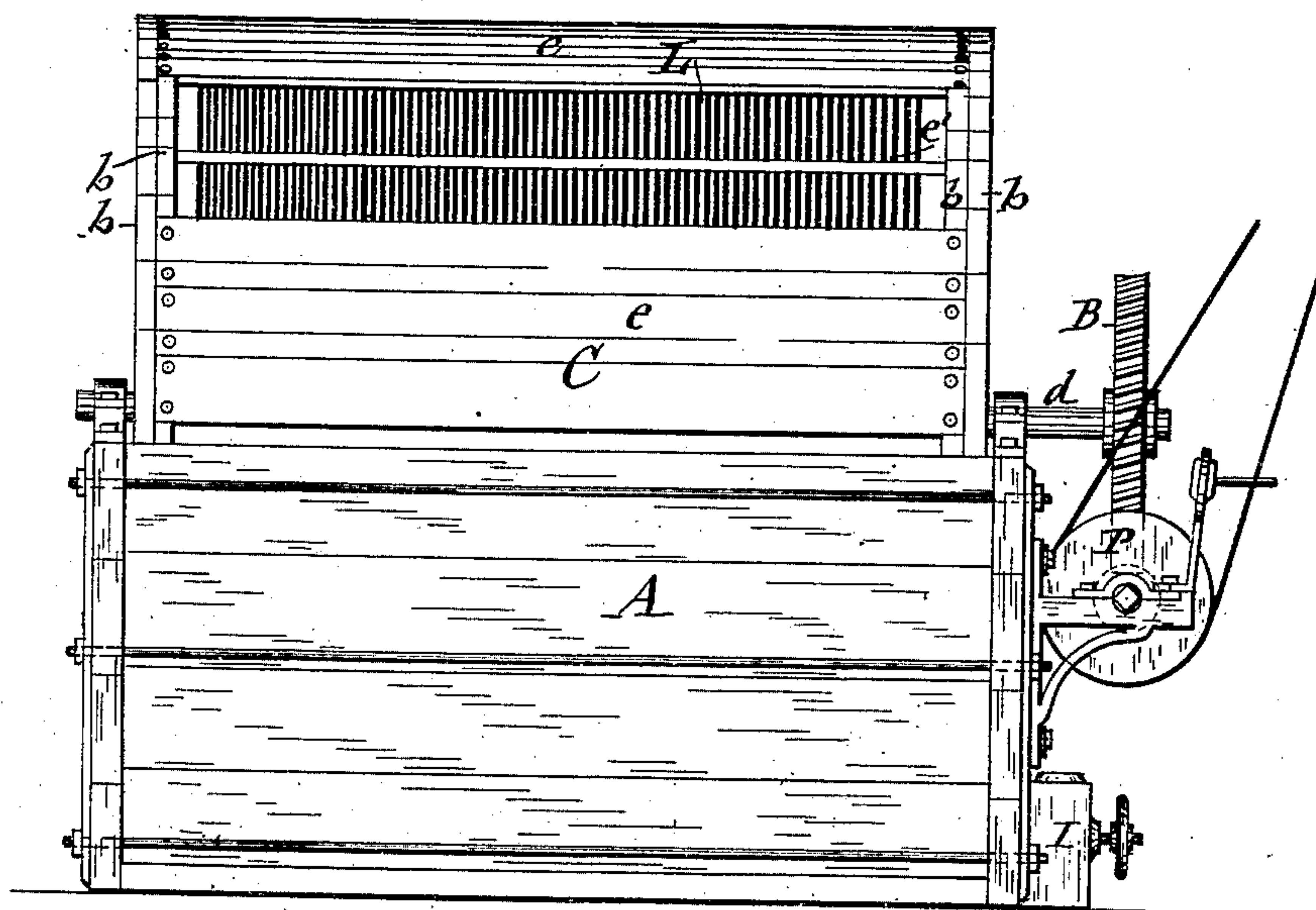


Fig. 2

WITNESSES:

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A. F. Walz

INVENTOR

Leonard Weldon

BY

Shull, Laess & Shull

ATTORNEYS

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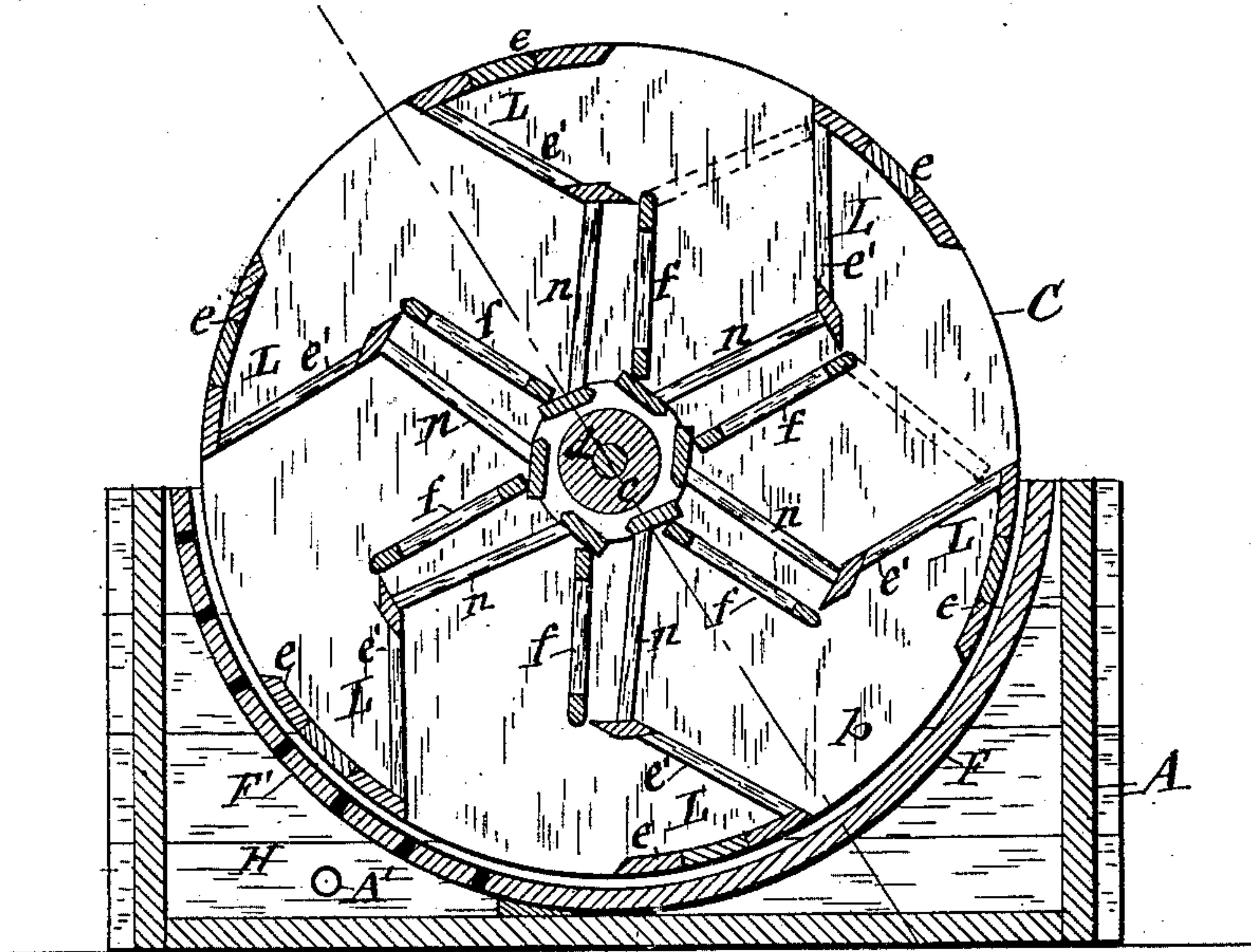


Fig. 3.

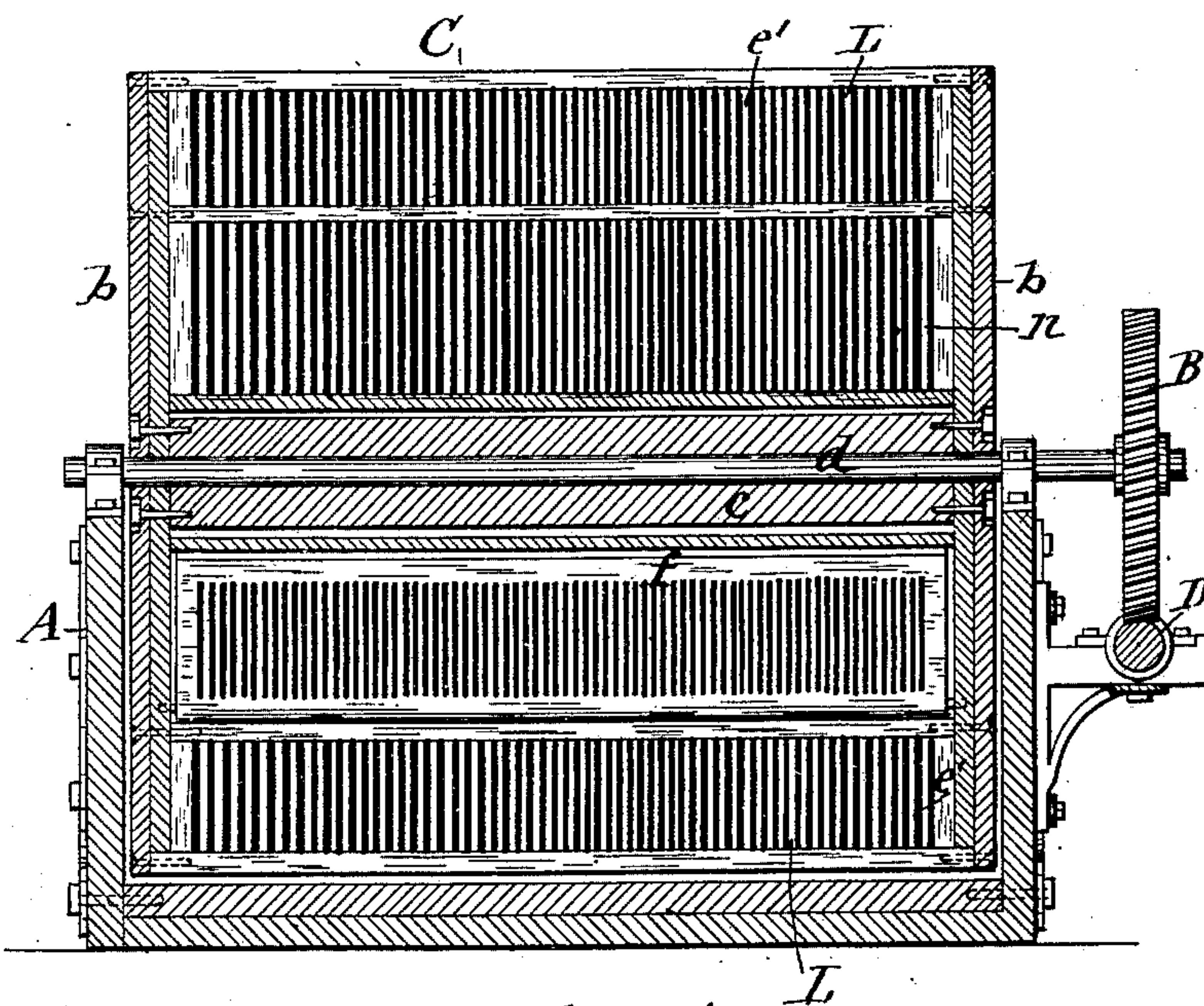


Fig. 4.

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# UNITED STATES PATENT OFFICE.

LEONARD WELDON, OF AMSTERDAM, NEW YORK.

## DYEING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 354,281, dated December 14, 1886.

Application filed September 15, 1886. Serial No. 213,566. (No model.)

*To all whom it may concern:*

Be it known that I, LEONARD WELDON, of Amsterdam, in the county of Montgomery, in the State of New York, have invented new and useful Improvements in Dyeing Apparatus, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to the class of dyeing apparatus designed for dyeing textile fabrics, and in which a rotary wheel or cylinder is arranged in the dye-vat to intermittently dip the articles to be dyed into the dye-liquor; and the invention consists in an improved construction and combination of the component parts of the dyeing apparatus, as hereinafter fully described, and specifically set forth in the claims, whereby the efficiency of the dyeing apparatus is materially improved.

In the annexed drawings, Figure 1 is an end elevation of my improved dyeing apparatus. Fig. 2 is a front elevation of the same. Fig. 3 is a transverse section, and Fig. 4 is a longitudinal section on line *x x*, Fig. 3.

Similar letters of reference indicate corresponding parts.

A represents the dye-vat, which is of rectangular or other suitable shape and watertight, and C denotes the wheel or cylinder for dipping the articles to be dyed in the dye-liquor contained in the aforesaid vat, said cylinder being journaled at opposite ends in suitable boxes or bearings secured to the top of each end of the vat, and to one end of the shaft of the cylinder, at the exterior of the vat, is secured a worm-gear wheel, B, which meshes in a worm, D, journaled on the exterior of the vat, and a pulley, P, fastened to the shaft of the worm D and connected by a driving-belt with a suitable motor, serves to transmit rotary motion to the cylinder C. I do not, however, limit myself to the aforesaid means for transmitting motion to the cylinder, as it is obvious that the same can be effected by other well-known devices.

In order to dispense with unnecessary room for dye-liquor in the vat and to economize in the use of said liquor, I form the interior of the vat A with a segmental solid false bottom, F, extending from the top of one side of the vat to the center of the bottom proper thereof,

and with a segmental perforated false bottom, F', extending from the top of the opposite side of the vat to the center of the bottom proper of the same. The portion H of the vat immediately back of said perforated bottom F' constitutes a receptacle for the dye-liquor, which is introduced through the top of the vat and passes through the perforated bottom F' into the receptacle H. A gate, I, of any suitable and well-known form, is connected with the receptacle H to draw off the dye-liquor when desired.

A' represents a steam-pipe, which is extended into the receptacle H to heat the dye-liquor to the requisite temperature.

The cylinder C, I form of two stout heads, *bb*, preferably each composed of two thicknesses or layers of wood, with the grain of one layer running crosswise the grain of the other layer, so as to prevent the warping of the heads, said heads being secured to a wooden roller, *c*, through which the shaft *d* of the cylinder is extended, and to which it is fastened. Lengthwise the interior of the cylinder C are extended a series of buckets, L L, which are secured at their ends to the inner sides of the heads *b b*. These buckets are formed either V-shaped or similar angular shape in cross-section, and are arranged adjacent to the periphery of the cylinder, and preferably in such positions as to make one side, *e*, of each bucket form a longitudinal section of the exterior of the cylinder, said side of the bucket being solid, while the other side, *e'*, of the bucket is perforated, or composed of slats placed short distances apart. From the inner edge of each bucket L toward the center of the cylinder is extended a slatted or perforated partition, *n*, and near the aforesaid edge of each bucket is hinged at one edge a gate, *f*, which has its free edge extended toward the back of the adjacent bucket.

In the operation of the described dyeing apparatus the fabric or articles to be dyed are thrown into the buckets L L from the top of one side of the vat, and by the rotation of the cylinder C said articles are carried in the buckets through the dye-liquor in the vat, and are thus intermittently dipped or immersed therein. The angular or V shape of the buckets causes the articles to be retained in the buckets after leaving the bath of dye-liquor with-



out moving from the positions in which they were taken up until the buckets are elevated to a position past a vertical line over the axis of the cylinder C, when the aforesaid articles 5 fall by gravity out of the elevated bucket and onto the back of the perforated side of the subjacent bucket and partition *n*, and during this fall the articles to be dyed are turned over, so that in their succeeding passage through the 10 dye-liquor and toward the top of the cylinder the dye-liquor penetrates the layers of fabric in the buckets in opposite direction from which it passed through the same during the previous revolution of the cylinder, and thus the 15 fabric is dyed more uniformly throughout. Heretofore the buckets of the wheel or cylinder C have been formed concave or rounded transversely, and this form of the buckets caused the articles in process of dyeing to be 20 rolled over in the bucket, and thus become more or less entangled or knotted in a mass and dyed unevenly. This, it will be observed, is effectually obviated by the angular or V shape of the buckets L L of my improved apparatus. 25

The delivery of the dyed articles from the dyeing apparatus I make automatic by turning the hinged or pivoted gates *f f* so as to stand with their free edge toward the hip or ridge 30 of the back of the adjacent bucket, as represented by the dotted lines in Fig. 3 of the drawings, said gates then serving as chutes, upon which the dyed articles drop from the elevated buckets, and then slide out over the 35 side of the vat.

Having described my invention, what I claim is—

1. In a dyeing apparatus, the combination, with the rotary wheel or cylinder, of buckets 40 formed angular in cross-section, as and for the purpose specified.

2. In a dyeing apparatus, the combination, with the rotary wheel or cylinder, of buckets in said cylinder adjacent to the periphery 45 thereof, and of angular form in cross-section, substantially as shown and set forth.

3. In a dyeing apparatus, the combination,

with the rotary wheel or cylinder, of buckets of angular form in cross-section and adjacent to the periphery thereof, and perforated partitions extending from the inner edge of the 50 buckets toward the center of the wheel or cylinder, substantially as described and shown.

4. In a dyeing apparatus, the combination, with the rotary cylinder, of buckets of V 55 shape in cross-section, and having one side solid and the other side perforated, and the solid side thereof constituting a longitudinal section of the exterior of the cylinder, substantially as described and shown. 60

5. In combination with the dye-vat and rotary cylinder, buckets in said cylinder and gates extended from the inner portion of the buckets toward the backs of the subjacent 65 buckets, and adapted to be set inclining toward the exterior of the cylinder, substantially as and for the purpose set forth.

6. In combination with the dye vat and rotary cylinder, buckets in said cylinder and gates, each pivoted at one edge near the inner 70 edge of one of the buckets and having its free edge toward the back of the adjacent bucket, substantially as described and shown, for the purpose specified.

7. In combination with the cylinder C, the dye-vat having a segmental solid false bottom extending from the top of one side of the 75 vat to the center of the bottom proper thereof, and a segmental perforated false bottom extending from the top of the opposite side of the vat to the center of the bottom proper 80 thereof, and a dye liquor receptacle back of said perforated bottom, substantially as described and shown.

In testimony whereof I have hereunto signed 85 my name and affixed my seal, in the presence of two attesting witnesses, at Amsterdam, in the county of Montgomery, in the State of New York, this 11th day of September, 1886.

LEONARD WELDON. [L. S.]

Witnesses:

LAWRENCE A. SERVISS,  
CHARLES KLINE.