

(No Model.)

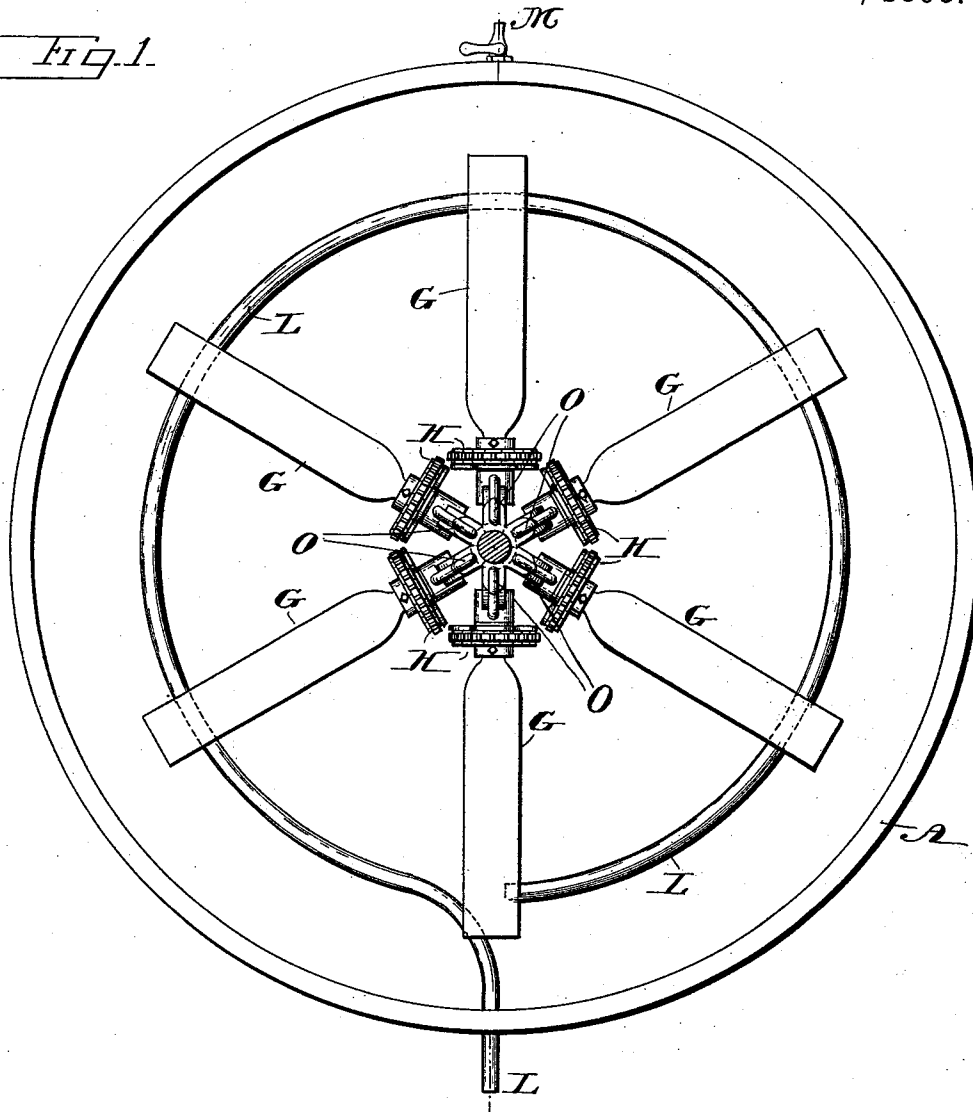
2 Sheets—Sheet 1.

A. C. T. STILWELL.
APPARATUS FOR DYEING, &c.

No. 536,486.

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Fig. 1.



Witnesses:

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ALFRED C. T. STILWELL, OF PHILADELPHIA, PENNSYLVANIA.

APPARATUS FOR DYEING, &c.

SPECIFICATION forming part of Letters Patent No. 536,486, dated March 26, 1895.

Application filed October 7, 1893. Serial No. 487,428. (No model.)

To all whom it may concern:

Be it known that I, ALFRED C. T. STILWELL, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia, State of Pennsylvania, have invented a new and useful Machine for Scouring or Dyeing Yarn, of which the following is a specification.

The object of my invention, is thoroughly and uniformly to scour and dye yarn automatically.

It consists of mechanism hereinafter described, comprising a containing tank or vessel, and mounted within the same a vertical main shaft and a sleeve adapted to be rotated thereby, with upper and lower yarn-carrying shafts or arms arranged in pairs in the same vertical plane and supported from said sleeve, and with actuating gearing so constructed and arranged that the yarn-carrying arms will have a uniform rotary motion in a horizontal plane and simultaneously therewith each pair of yarn-carrying arms will have a separate rotary motion in a vertical plane.

By my invention, the yarns are thoroughly and uniformly scoured and dyed, and manual labor is almost dispensed with. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1, is a plan view of the machine, showing the yarn-carrying shafts or arms, sprocket wheels for driving the same and a perforated circular coil of steam pipe at the base of the containing vessel. Fig. 2, is a vertical sectional view of the machine; and Fig. 3, is a vertical section of a lower sprocket wheel, the main shaft, sleeve and step.

Similar letters refer to similar parts in all of the figures.

A is a tub, tank or vessel containing the liquid material used for scouring or dyeing.

B is a driving shaft of the required strength, and if of steel or iron, should have a copper, brass or composition covering shrunk on it. The object of this covering is to prevent the destruction of the shaft by the dyeing liquid.

C is a foot or step of hard wood or metal securely bolted to the bottom of the vessel A, and into which the lower end of the shaft B is inserted, the said foot acting as a bearing.

D is a sleeve of the necessary length, preferably of composition, which fits over the

shaft B loosely, and inside of which the shaft B revolves. The sleeve D must fit over the shaft B loosely enough to admit of the sleeve D being raised, and carrying with it when raised or lowered, all brackets, arms or yarn-carrying shafts connected with the same.

E are top brackets, to which bearings are attached, and in which are journals, wherein the top yarn-carrying shafts or arms revolve, and are attached to the sleeve D by a V slot, and must be so constructed that they may be adjusted to hold various lengths, hanks, skeins or packages.

F are lower brackets, and must be securely bolted to, or cast on the sleeve D. Each bracket contains a bearing in which the journal of each of the lower yarn-carrying shafts or arms respectively revolve.

G are yarn carrying shafts or arms, preferably of hard wood, of the required width and length, on which the yarn to be scoured or dyed is placed, as shown in Fig. 2, an upper yarn-carrying shaft and the one immediately below it constituting a pair.

H are sprocket wheels of proper diameter for the speed desired, each of which is keyed, or otherwise made fast, to each journal in which its yarn-carrying shaft or arm G revolves.

I (see Fig. 3) are adjustable lugs or lengthened sprockets attached to each lower sprocket wheel, the number of the lugs being proportioned to the number of revolutions of the arms G desired, the greater the number of the lugs, the faster the revolution of the said arms.

K are stationary L shaped uprights, the lower parts of which are bolted to the step, and the upper parts strike on the lugs as they revolve, the number of the said uprights being proportioned to the number of the revolutions of the arms desired.

L is a steam-pipe coil of proper size, entering the tank or vessel A, and running around the same, on or near the bottom of the said vessel so as to heat the liquid; the said pipe being sufficiently perforated to allow the escape of steam to heat the liquid, but not unduly to agitate the liquid.

M is a drain faucet, through which the liquid contained in the vessel A, is emptied therefrom.

N is a friction plate, preferably of compo-

sition, on which the shaft B bears in the foot or step C.

O are eyelet bolts, partly threaded, and a short distance from the lower ends of each, they have recesses around their entire circumferences.

P are perforations in the collar of the sleeve D, threaded for the screws on the eyelet bolts O.

Q are perforations in the brackets E, threaded for set screws.

R are set screws screwed into the perforations Q, the ends of which are not threaded, and enter into the recesses in the eyelet bolts O.

S is the link belting connecting and driving the upper and lower sprocket wheels of each pair.

T is the collar on the sleeve D.

U is the beam that supports the shaft B.

V is the pulley on the shaft B.

W are ropes or chains, passing over pulleys secured to the beam U and having at their lower extremities hooks to fit in the eyes in the bolts O, for the purpose of raising the sleeve D together with its attachments.

X are hanks of yarn upon each pair of yarn carrying shafts or arms, the yarn being sufficiently tight to cause the hanks to revolve by the revolution of the pair of yarn carrying shafts or arms on their axes, but not so tight as to cause the yarn to stretch.

A' is a pin, preferably of steel, inserted near the lower end of the shaft B which fits into recesses made upon the lower end of the sleeve D, and by means of which the sleeve D when put in place, is made to revolve, with the parts thereto attached, by the revolving of the shaft B.

The link belting S, is run over and connects each pair of sprocket wheels, whereby the yarn-carrying shafts or arms G are revolved in proper time, such revolution being occasioned by the revolution of the sleeve D, and the adjustable lugs or lengthened sprockets I in each lower sprocket wheel striking against and passing over one of the stationary uprights K.

By screwing the eyebolts O, after the said bolts have been fixed in position, and so held by the set screws R, the upper paddles may be raised or lowered, so that the distance between the lower and upper paddles may be adjusted to suit the lengths of the hanks of yarn.

When the shaft B is revolved, and thus occasions a revolution of the sleeve D, and the lugs I, striking against the uprights K, cause a revolution of each of the yarn-carrying shafts G, there is also occasioned thereby, a revolution of the hanks of yarn upon and about each pair of the said yarn-carrying shafts, and by reason of the revolution of the yarn upon and about each pair of yarn-carrying shafts, the said yarn, by thus passing in two directions through the liquid in the vessel

A, is thoroughly and uniformly scoured or dyed.

What I claim is—

1. In a machine for scouring or dyeing yarn, the combination with a containing tank or vessel, of a stepped vertical driving shaft, means to support and drive the same from its upper end, a sleeve surrounding said shaft and adapted to be revolved thereby when the parts are in normal position, brackets mounted on said sleeve at its upper and lower ends, upper and lower yarn-carrying shafts or arms in pairs journaled in said brackets, driving gearing on the inner ends of said yarn-carrying shafts with connecting gearing between them, and means to actuate said driving gearing on the yarn-carrying shafts; substantially as described.

2. In combination, constituting a yarn dyeing and scouring machine, a containing tank, a vertical main shaft, means to maintain and rotate the shaft, a sleeve adapted to be rotated thereby, upper and lower yarn-carrying arms, in pairs, supported from said sleeve, with gearing to rotate the said arms in unison, and with means to actuate said gearing on the rotation of the sleeve, whereby said yarn-carrying arms will have two simultaneous rotary movements, one in a horizontal plane; and the other, separate as to each pair of arms, in a constantly moving vertical plane; substantially as described.

3. In combination, the containing tank, the vertical main shaft, means to support and drive the same, the sleeve adapted to be revolved thereby, brackets secured to the sleeve, upper and lower yarn-carrying arms journaled in the brackets, driving gearing on the said arms and connecting gearing between each pair of arms, means to actuate said gearing on the horizontal rotary movement of the arms by the revolution of the main shaft and sleeve, and means to adjustably secure the brackets to the sleeve; substantially as described.

4. In combination, the containing tank, the vertical main shaft, means to support and drive the same, the sleeve adapted to be revolved thereby, brackets secured to the sleeve, upper and lower yarn-carrying arms journaled in the brackets, driving gearing on the said arms and connecting gearing between each pair of arms, means to actuate said gearing on the horizontal rotary movement of the arms by the revolution of the main shaft and sleeve, means to adjustably secure the brackets to the sleeve, and means to raise and lower the sleeve and the several mechanisms attached thereto, upon the central vertical main shaft; substantially as described.

This specification signed and witnessed the 6th day of October, 1893.

ALFRED C. T. STILWELL.

Witnesses:

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