

(No Model.)

2 Sheets—Sheet 1.

A. C. T. STILWELL.
DYEING MACHINE.

No. 536,487.

Patented Mar. 26, 1895.

Fig. 1.

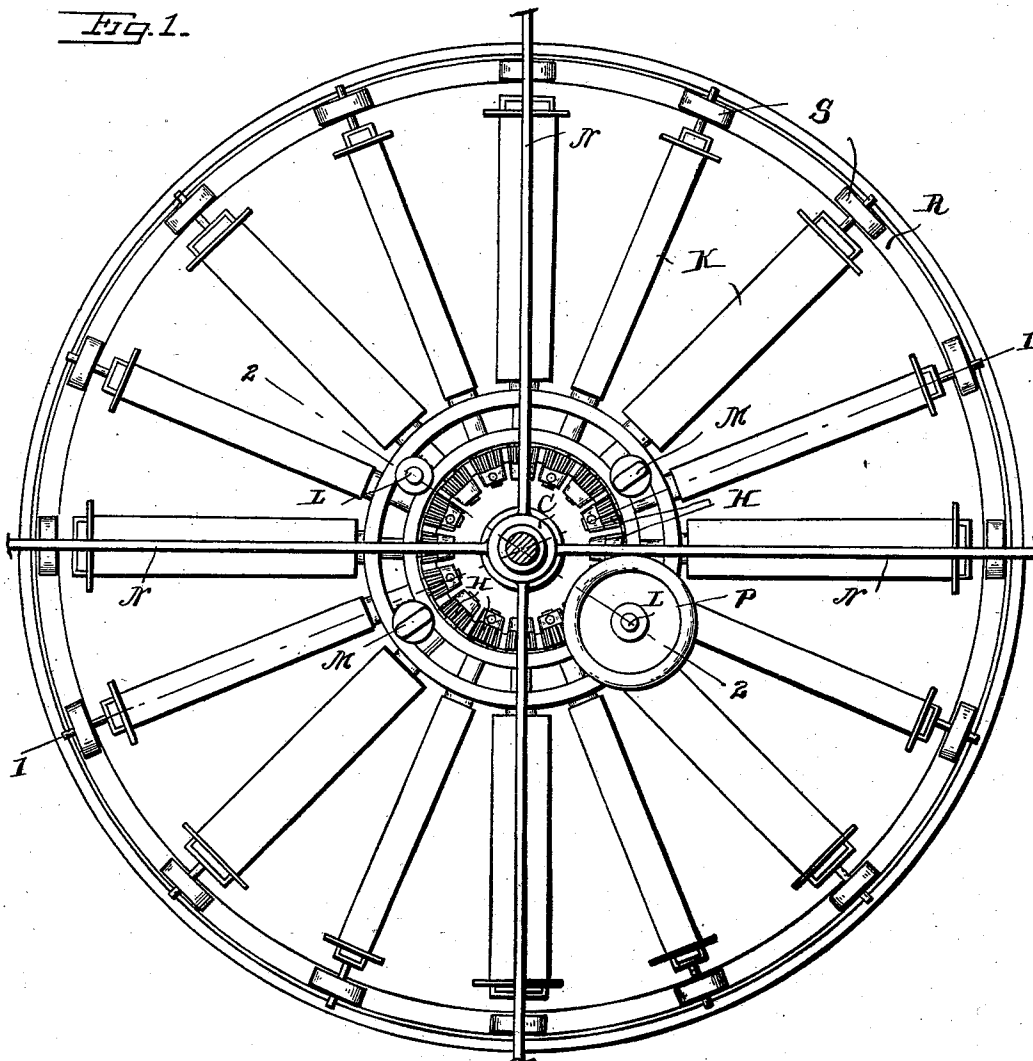
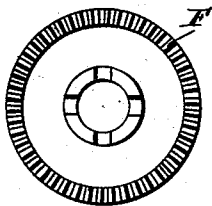


Fig. 4.



Witnesses.

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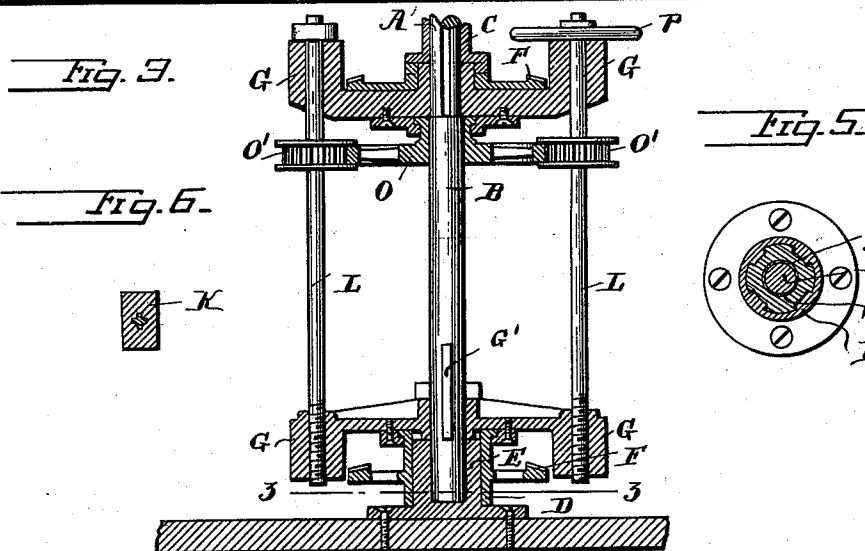
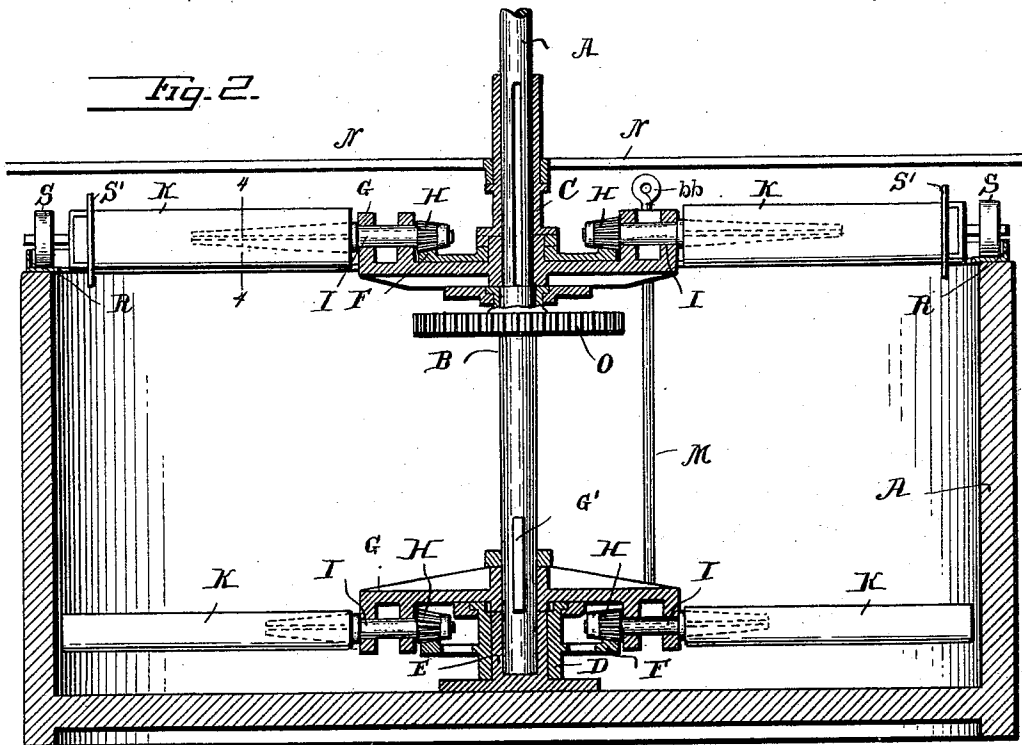
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2 Sheets—Sheet 2.

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DYEING MACHINE.

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Witnesses.

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UNITED STATES PATENT OFFICE.

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

DYEING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 536,487, dated March 26, 1895.

Application filed January 8, 1895. Serial No. 534,233. (No model.)

To all whom it may concern:

Be it known that I, ALFRED C. T. STILWELL, a citizen of the United States, residing in the city of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Dyeing and Scouring Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to machines for scouring and dyeing yarn, and consists of improvements in the machine for which application for patent, Serial No. 487,428, was filed by me October 7, 1893.

My present machine is constructed and operates on the same principle involved in the other machine, viz: of operating the yarn-carrying arms to produce two different but simultaneous movements of the yarn in the liquor; one a uniform rotary motion in a horizontal plane, and the other a separate rotary motion, as to each pair of arms, in a constantly moving vertical plane. The present machine, in other respects, is entirely different therefrom in construction, as hereinafter described.

In the accompanying drawings illustrating my invention, Figure 1 is a plan view of the machine; Fig. 2, a vertical sectional view on the line 1—1 of Fig. 1. Fig. 3 is a like view on the line 2, 2 of Fig. 1; Fig. 4, a plan view of a connecting actuating gear; Fig. 5, a lateral section on the line 3—3 of Fig. 3; and Fig. 6 is a lateral section through one of the yarn-carrying arms.

In a suitable cylindrical containing tank or vessel A, is stepped a vertical main driving shaft A', in a recessed guiding and supporting plate E which is surrounded by a sleeve-like bracket D from which projects an annular rim F having on its upper annular edge, a rack gear (shown in Fig. 4) adapted to contact with the toothed surface of the bevel gearing H on the end of the shaft I upon which the yarn-carrying arms K are mounted at one end. A brass covering sleeve B surrounds the lower portion of the shaft A within the dye liquor and supports the gear wheel O mounted on the shaft A'. These shafts I are supported in journal recesses in a centrally

recessed annular disk G keyed at G' to the main shaft A. The ends of the shafts I are feathered and enter a suitably shaped longitudinal recess (see Fig. 6) in the yarn-carrying arms K whereby the latter are caused to be rotated on the rotation of said shafts I. A similar upper disk G is keyed to the main shaft A' to maintain and operate similar upper yarn-carrying arms K, and is provided with similar actuating gearing. These arms K are arranged in pairs, the arms of each pair being maintained in the same vertical plane; but as the upper and lower carrying disks G are rotated, in unison with each other, by the rotation of the main shaft, the vertical planes in which the arms are maintained in pairs are constantly changing ones.

Upon the annular edge of the containing tank A is provided a flanged guide R which thus operates to maintain thereon the wheels S mounted upon shafts terminating in caps S' adapted to fit over the ends of the upper yarn-carrying arms K. By lifting the parts out of the containing tank the arm K can be withdrawn from the end of the shaft I, when desired. The upper and lower arm-carrying disks G G are connected by means of the two link bars or lifting rods M, M, which pass freely through a recess in the upper disk, and have eyes b b by which the lower arms and their driving gears may be raised in the containing vessel, toward the upper arms, to enable the yarn-carrying arms to be slipped off their shafts when removing the dyed hanks of yarn. The shaft A' is surrounded by a loose cog gear O mounted on the under face of the upper disk G, which cog O rests upon the copper sleeve or sheathing B. This gearing meshes with gear wheels O' O' each mounted loosely upon screw rods L L both of which have screw threaded ends F which register with screw threaded recesses in the lower disk G, and one of which is provided with an operating handle P. Thus when it is desired to adjust the disks relatively to each other, a turn of the handle P will cause the lower disk to rise on the screw threaded lower ends of the rods L, and thus there will be uniformity in the adjustment of all the lower yarn-carrying arms toward the corresponding upper yarn-carrying arms, of each pair or set.

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

1. The combination in a dyeing and scouring machine, of a containing tank, a vertical driving shaft centrally stepped therein, means to drive the shaft from its upper end, a pair of annular disks arranged parallel with each other in different horizontal planes and mounted upon and actuated directly by the main shaft; an upper and a lower series, in pairs, of horizontal yarn-carrying arms each independently mounted in separate journal bearings in said upper and lower disks respectively, and provided with cog gearing H on their free inner ends; and upper and lower sleeve-like brackets D mounted upon the main shaft and each carrying an annular rack gear F adapted to contact with the gearing H on the yarn-carrying arms and operating to rotate them separately, but simultaneous with their uniform rotation in series by the rotation of the disks in which they are mounted; substantially as described.
2. The combination with the containing tank and a vertical driving shaft suitably mounted therein, of upper and lower yarn-carrying arms arranged in vertical pairs, means between said arms and the main shaft operating to rotate said arms uniformly in horizontal parallel planes, other means actuated by said main shaft and operating simultaneously with the first to severally rotate each of said yarn-carrying arms, a flanged guide rail secured to the annular rim of the tank, and guide wheels adapted to move thereon, each guide wheel being provided with a shaft or axle having its inner bearing

in the peripheral end of the yarn-carrying arms; substantially as described.

3. In a machine for dyeing and scouring yarn, the combination with a containing tank and a stepped vertical driving shaft, with means to actuate the same, of upper and lower annular disks centrally recessed and adjustably keyed to said shaft, horizontal yarn-carrying arms arranged in vertical pairs and journaled in said disks, means between said disks to connect and adjust them relatively to each other, and means actuated by the main shaft to independently rotate each of said yarn-carrying arms; substantially as described.

4. The combination in a machine of the character described, comprising a containing vessel and a vertical driving shaft with means to support and actuate the same, of upper and lower annular disks G G centrally recessed and adjustably keyed to the shaft, horizontal yarn-carrying arm shafts I journaled in the disks and having gearing H, bracket sleeves having annular rack plates F meshing with said gearing H; connecting and adjusting screw rods L L between the disks G G and carrying loose gear wheels O' O' with a loose cog gear O on the main shaft adapted to register with and operate the gearing of the connecting screw rods L L; substantially as described.

In testimony whereof I have hereunto affixed my signature this 29th day of December, A. D. 1894.

ALFRED C. T. STILWELL.

Witnesses:

FRANK S. BUSSER,
H. T. FENTON.