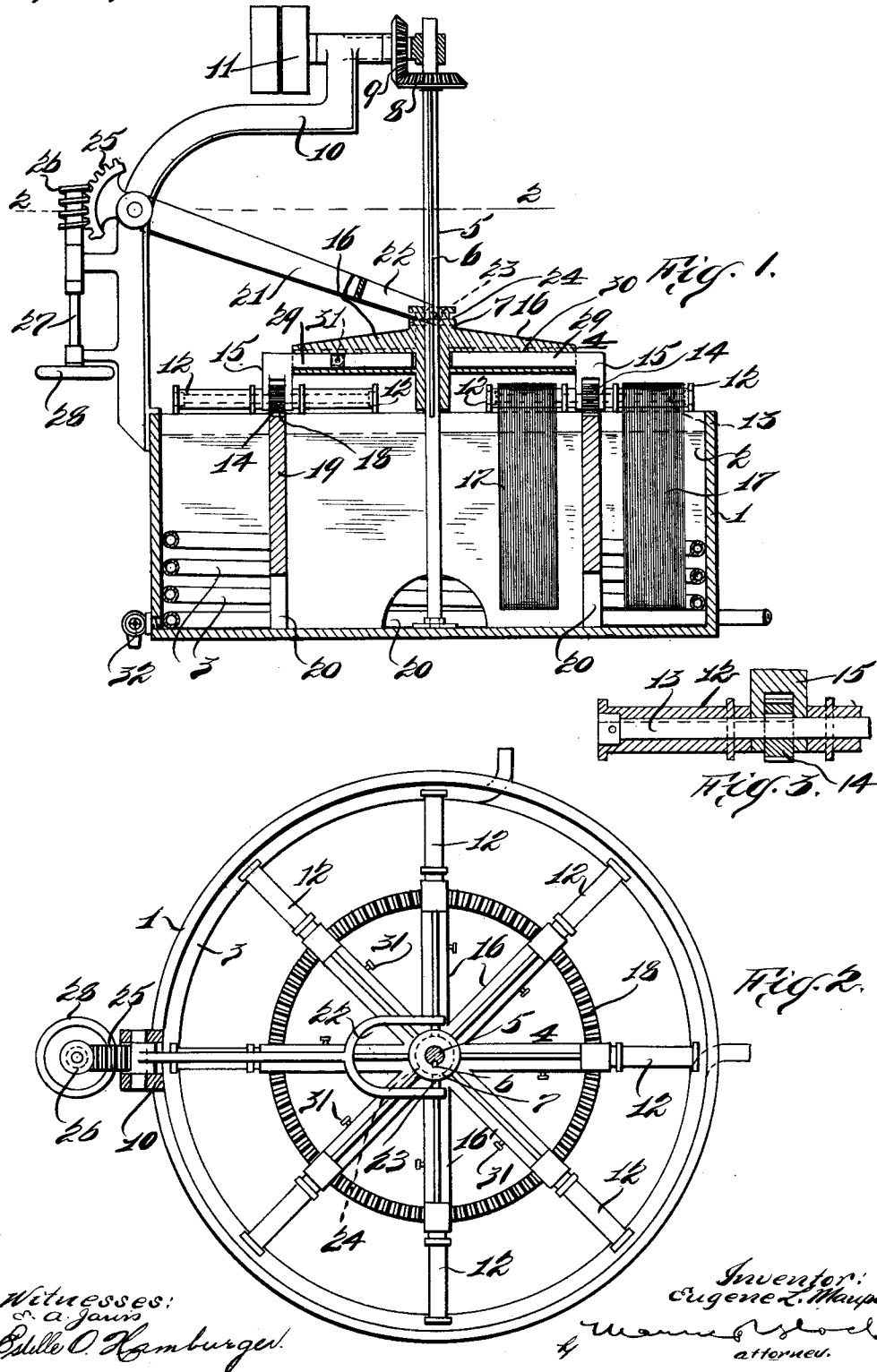


E. L. MAUPAI.
SKEIN SILK DYEING APPARATUS.
APPLICATION FILED APR. 12, 1912.

1,051,342.

Patented Jan. 21, 1913.



Witnesses:
E. A. Jann
Edille O. Hamburger.

Inventor:
Eugene L. Maupai
Wm. H. Block
attorney.

UNITED STATES PATENT OFFICE.

EUGENE L. MAUPAI, OF NEW YORK, N. Y.

SKEIN-SILK-DYEING APPARATUS.

1,051,342.

Specification of Letters Patent.

Patented Jan. 21, 1913.

Application filed April 12, 1912. Serial No. 690,341.

To all whom it may concern:

Be it known that I, EUGENE L. MAUPAI, a citizen of the United States of America, residing at Bronx borough, city, county, and State of New York, have invented certain new and useful Improvements in Skein-Silk-Dyeing Apparatus, of which the following is a full, clear, and exact description.

This invention relates to a dyeing apparatus, the object being to provide a mechanical device adapted to facilitate the dyeing of articles, but more especially silk in the form of skeins.

The function of my improved apparatus is to keep the skeins of silk in motion during the dyeing process, the apparatus being organized to cause the skeins of silk to move about an axis, the said skeins being vertically disposed relative to said axis and to cause the said skeins to travel or move in the manner of a belt, while being rotated about the aforementioned axis.

I will now proceed to describe my invention in detail, reference being had to the accompanying drawing, forming part hereof, wherein:

Figure 1 is a vertical sectional view, partly in elevation, of my improved dyeing apparatus; Fig. 2 is a sectional plan view thereof, the section being taken on a line 2—2 in Fig. 1; and Fig. 3 is an enlarged, fragmentary, sectional detail view of the rotatable supports for the skeins of silk.

In the drawing which illustrates a preferred embodiment of my invention, the numeral 1 indicates a tank or receptacle designed to retain a coloring or dyeing fluid indicated by 2. In the process of dyeing silk, it is preferable, if not necessary, to keep the coloring fluid at a certain temperature and to maintain the said fluid at the required temperature I provide a coil 3 through which steam or any other heating element can flow.

To carry out the object of my invention I provide a rotatable frame or spider 4, the said frame being slidably mounted upon a rotatable shaft 5, which is provided with a feather 6. The feather 6 engages a keyway in the hub 7 of the frame 4, by which means the said frame is rotated when the shaft 5 is operated. To operate the shaft 5 I provide the same with a gear 8, which meshes with the pinion 9 rotatably mounted in the bracket 10. The gear or pinion 9 is rotated

by means of the pulley 11 and a belt, which is not shown.

To support the skeins of silk in order to cause them to move through the coloring element, I provide spools 12, preferably made out of porcelain, each of the said spools being fixed to a shaft 13. The shaft 13 also carries the gear 14, by which means the said shaft 13 is rotated. The shaft 13 is rotatably supported in a fork 15, with which each arm 16 of the frame 4 is provided. As illustrated in Fig. 2, the frame 4 comprises a plurality of arms 16, all of which are carried by the hub 7.

To impart to the skeins of silk, which are indicated by 17 in Fig. 1, (two only being shown) a belt-like movement during the rotation of the frame, I provide a rack 18 with which the gears 14 mesh, the said rack being, in this instance, formed in the upper end of a circular wall 19 in the tank 1, the said circular wall being provided with openings 20 for the circulation of the dyeing element. It will be obvious that when the frame 4 is rotated, the skeins of silk will be caused to travel in a circular path through the dyeing fluid; at the same time the spools 12 will rotate and cause the said skeins to travel in the manner of a belt, or in a vertical plane, around the said spools.

By imparting to the skeins of silk the movements above referred to, all portions of the silk are caused to pass through the dyeing or coloring fluid, and as the said skeins are at no time at rest during the dyeing process, no one part of the skein remains in the dyeing fluid longer than another part. Therefore the silk is dyed equally throughout.

In order to carry the skeins away from the dyeing fluid after the dyeing process has been completed, I move the frame 4 upwardly along the shaft 5, by means of a pivotal lever 21, the said lever being provided with a fork 22, having pins 23 adapted to take into an annular groove 24 in the frame 4.

To operate the lever 21, I provide the same with a segmental rack 25, having in mesh therewith, a worm 26, the said worm being carried by a shaft 27, provided with a handwheel 28 for turning the same. When the worm 26 is rotated in the proper direction the lever 21 will be thrown upwardly, thereby sliding the frame 4 along the shaft

5 and carrying the skeins of silk 17 out of the dyeing fluid.

To facilitate the removal of the skeins of silk from the spools and also to facilitate the placing of skeins upon said spools I movably mount the jaws 15 in the arms 16 of the frame 4, each of said jaws being carried by a bar 29. Each bar 29 is slidably fitted in a guideway 30 with which each arm 16 is provided, set-screws 31 being provided to secure the bars 29 in position in their respective guideways.

When the frame 4 is moved upwardly the jaws 15 and spools carried thereby may be moved outwardly, when the set-screws 31 are backed off. When the spools have been moved outwardly, as described, they may be easily gotten at, for the purpose of removing the skeins which have been colored or for the purpose of placing uncolored skeins thereupon. After the spools have been loaded, the jaws 15 will then be moved inwardly to their normal position and the set-screws 31 caused to hold them in such position. After all the spools have been loaded, the frame 4 is then lowered until the gears 14 and rack 18 intermesh, at which time the skeins 17 will have entered the coloring fluid. After the frame has been lowered, the machine or apparatus may be started and operated in the manner described. The tank 1 is provided with an outlet valve 32 through which coloring matter may be drawn off.

Having now described my invention in detail, what I claim and desire to secure by Letters Patent is:

1. A dyeing apparatus comprising a tank adapted to retain a coloring element, a rotatable frame adjacent said tank, radially movable supports carried by said frame, rotatable spools carried by said radially movable supports, means for securing said radially movable supports, and means for rotat-

ing said frame and said spools simultaneously.

2. A dyeing apparatus comprising a tank adapted to retain a coloring element, a rotatable frame adjacent said tank, radially movable supports carried by said frame, a gear carried by each of said radially movable supports, a rack adapted to mesh with said gears, spools adapted for rotation by said gears, and means for rotating said frame.

3. A dyeing apparatus comprising a tank adapted to retain a coloring element, a rotatable frame adjacent said tank, said frame comprising a plurality of radially disposed arms provided with guideways, a bar slidably mounted in each of said guideways, means adapted to secure said bars in said guideways, a gear rotatably mounted at the outer end of each of said bars, spools adapted for rotation by said gears, a rack adapted to mesh with said gears, and means for rotating said frame.

4. A dyeing apparatus comprising a tank adapted to retain a coloring element, a rotatable frame adjacent said tank, said frame comprising a plurality of radially disposed arms provided with guideways, a bar slidably mounted in each of said guideways, means adapted to secure said bars in said guideways, a shaft rotatably supported at the outer end of each of said bars, a gear carried by said shaft and secured thereto, spools carried by said shaft and adapted to rotate therewith, a rack adapted to mesh with said gears, and means for rotating said frame.

Signed at New York city, N. Y., this 11th day of April, 1912.

EUGENE L. MAUPAI.

Witnesses:

DAVID HERSHFELD,
EDWARD A. JARVIS.