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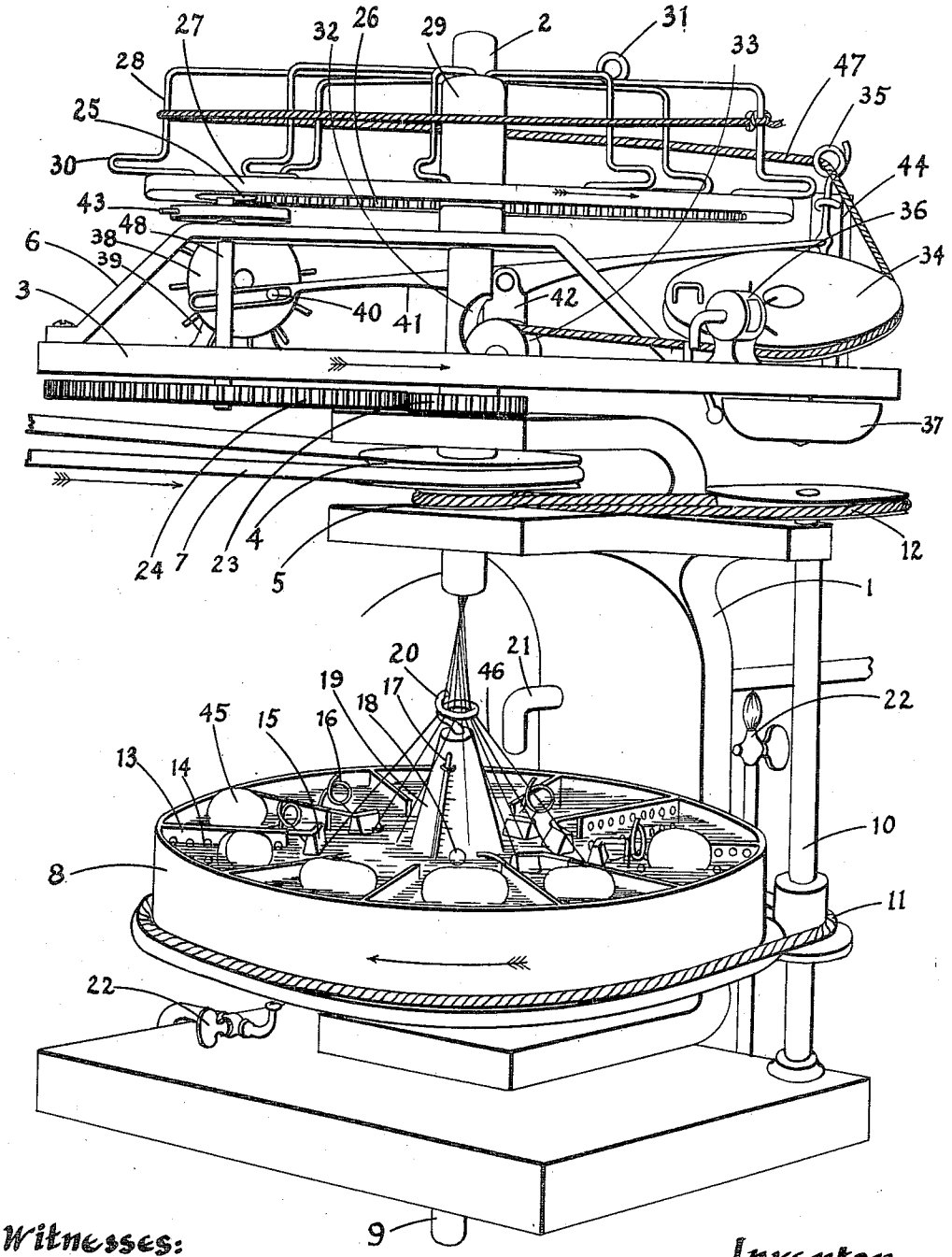
SILK CLEANING AND TWISTING MACHINE.

APPLICATION FILED JUNE 29, 1910.

995,382. Patented June 13, 1911.



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SILK CLEANING AND TWISTING MACHINE.

995,382. Specification of Letters Patent. Patented June 13, 1911.

Application filed June 29, 1910. Serial No. 569,603.

To all whom it may concern:

Be it known that I, GEORGE ELIOT SLY, a citizen of the United States, residing at San Diego, in the county of San Diego and State of California, have invented certain new and useful Improvements in Silk Cleaning and Twisting Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a silk cleaning and twisting machine and has for its object the provision of apparatus that will accomplish these results in an efficient and expeditious manner and without waste of material.

It is more particularly a device in which filaments may be unwound from cocoons that are placed in a slowly revolving basin of water, and then passed to another portion of the machine, rapidly revolving in the opposite direction, thereby twisting the filaments into a thread.

Another object is to eliminate much of the hand labor that has heretofore been employed in the preliminary processes of manufacturing silk, and that created a certain amount of waste, and to provide a simple winding and skeining device.

These objects are attained by the device embodied in the novel construction and combination of parts, substantially as herein illustrated, described, and claimed.

Referring to the drawing, which forms a part of this specification, and in which is shown a perspective view of the preferred embodiment of the invention, numeral 1, designates the frame of the machine. A hollow shaft 2, having a master wheel 3, and pulleys 4, and 5, mounted thereon integral with the shaft, is journaled in the upper portion of the frame. A standard or support 6, is secured to the master wheel. Belt 7, drives the machine.

In the lower portion of the frame, a revolving basin 8, having a tubular shaft 9, is mounted. A countershaft 10, mounted in the frame, is so connected by belt 11, and crossed belt 12, as to drive basin 8, slowly and in a direction opposite to that of the master wheel. A series of partitions 13, divide basin 8, into a series of compartments, the partitions having perforations 14, to permit water to circulate freely within the said basin. A brush 15, adapted to be immersed in the water, is mounted in front of each compartment.

Wire loops 16, through which the silk filaments pass as they are unwound from the cocoons, are so mounted as to keep the cocoon within its compartment and to prevent entanglement with the brush. A thermometer 17, is provided for determining the temperature of the water. An overflow opening 18, in the upper portion 19, of shaft 9, permits the water to escape and carry away the gum and oil that has been removed from the silk strands by brushes 15. A concentrating loop 20, through which the strands are passed, is mounted on the end of member 19. A water supply pipe 21, provides a constant supply of water near the rim of the basin, replacing that which is lost by the overflow. Burners 22, heat the water in supply pipe 21, and maintain the water in basin 8, at the correct temperature.

A small stationary pinion 23, fastened to the frame, meshes with large gear wheel 24, on the bottom of the master wheel. A small pinion 25, mounted on the same shaft as gear wheel 24, meshes with a large internal gear 26, on the rim of reel 27, thereby operating the same. A series of arms 28, extending radially from hub 29, of the reel, are provided with bend 30, for the purpose of preventing the skein from falling when being removed from the reel. One spoke is pivoted to the rim and is formed with a handle 31, whereby the free end is lifted from engagement with the hub and swung to one side to loosen the skein from the arms of the reel. An opening 32 in shaft 2, allows guide pulley 33, mounted on the master wheel, to project to the center of the hollow shaft and receive the united twisted filaments from concentrating ring 20.

A measuring wheel 34, mounted on the outer edge of the master wheel, on an inclined axis, operates as a guide wheel to loop 35. A measuring appliance 36, is operated by wheel 34, and in turn operates bell 37, when a predetermined number of turns have been made.

Wheel 38, mounted on standard 39, transversely of the master wheel, operates transverse lever 41, pivoted to standard 42, the wrist pin 40, engaging with a slot in lever 41, for that purpose. Wheel 38, is operated

by a pin 43, attached to shaft 48. Lever 41, operates loop 35, which is slidably mounted on standard 44, on the opposite side of the master wheel, for the purpose of traversing the twisted thread across the reel. 45 designates the cocoons, 46, the filaments leading from the cocoons, and 47, the twisted thread.

In the operation of this machine, the basin is filled with hot water, to which chemicals for removing the gum have been added, and a cocoon is placed in each compartment. A filament is passed from each cocoon through the retaining loop, and under the brush, to the concentrating ring, from which they pass upward through the hollow shaft and over the measuring pulley to the reel. The master wheel and the basin, revolving in opposite directions, thereby operate to twist the various filaments into a thread. Should a filament become broken, the operator may stop the revolving basin and connect the ends of the filament, the basin being driven by friction in such a manner as to be easily controlled by the operator without stopping the entire machine. The filaments, being brushed free of gum and passing from the hot water, dry quickly as they are wound into skeins on the reel. Hot water is continuously introduced within the basin and the overflow thus caused, carries away the gum and other matter that has been removed from the silk filaments. As the cocoons unwind they are turned over many times thus heating all portions in a uniform manner. It will be seen that a spool or bobbin may be substituted for the reel and the thread wound thereon, the spool or bobbin being geared to the desired speed.

From the foregoing description it will be seen that simple and efficient means are herein provided for accomplishing the objects of the invention, but while the elements shown and described are well adapted to serve the purposes for which they are intended, it is to be understood that the invention is not limited to the precise construction, as set forth, but includes within its purview such changes and combinations of material as may be necessary or desirable to utilize the basic idea of the herein described invention.

I claim as my invention:

1. A device of the character described, comprising a cocoon basin containing hot water, having perforated partitions forming compartments for the cocoons, each compartment having open coil wires for the filaments to pass through, and to retain the cocoon within its compartment and in the hot water, and brushes, immersed in the hot water in front of each compartment, to remove the gum from the filaments, and mechanism for reeling the filaments into a thread, substantially as set forth.

2. A device of the character described, comprising a frame, a revolving cocoon basin containing water, with brushes immersed therein, having a hollow shaft, the lower portion of the shaft being journaled in the frame, and the upper portion of the shaft being provided with an overflow opening to allow the surface water to escape from the basin and carry off the gum and other matter that is removed from the filaments by the brushes, a concentrating ring on the end of the shaft, and a winding and reeling mechanism, revolving in the contrary direction to that of the cocoon basin, substantially as set forth.

3. A device of the character described, comprising a rotatable cocoon basin containing hot water, a hollow shaft on which the basin is mounted, brushes to remove the gum from the filaments, a water supply pipe, feeding hot water to the cocoon basin, burners to heat the water in the supply pipe, and to retain the temperature of the water in the basin at the point desired, means allowing the overflow and escape of the water through the shaft on which the basin is mounted, and a winding and reeling mechanism adapted to rotate in a direction contrary to that of the cocoon basin, substantially as set forth.

4. A device of the character described, comprising a frame, a cocoon basin, revolving on a shaft journaled in the frame, and having compartments made of perforated material, and also having open coil wire loops and brushes in front of each compartment, a concentrating ring on the upper end of the shaft on which the basin is carried, and a superimposed winding and reeling mechanism adapted to rotate rapidly in a contrary direction to that of the cocoon basin, thereby twisting the filaments into a thread as they pass from the concentrating ring of the basin to the reeling mechanism, substantially as set forth.

5. A device of the character described, comprising a frame, a revolving cocoon basin, mounted on the lower portion of the frame, a superimposed reeling and winding mechanism, comprising a master wheel and pulleys, integral with a hollow shaft journaled in the upper portion of the frame, and on which a reel is mounted to rotate independently of the master wheel, and a counter shaft, connected by driving belts to the cocoon basin and the winding mechanism, whereby the cocoon basin is rotated independently of, and in a contrary direction to that in which the master wheel rotates, and whereby the cocoon basin may be stopped by the operator independently of the rapidly revolving winding mechanism, to re-unite a broken filament, substantially as set forth.

6. A device of the character described, comprising a revolving cocoon basin in com-

bination with a reeling and winding mechanism revolving in the opposite direction, comprising a frame and a stationary pinion attached thereto, a revolving master wheel, a gear wheel having its shaft journaled in the master wheel, and mounted to engage with the stationary pinion attached to the frame in which the master wheel rotates, whereby the gear wheel makes one revolution to a number of revolutions of the master wheel, a reel driven by a small pinion on the shaft of the gear wheel, and a traversing mechanism, whereby the thread is made to wind upon the reel, substantially as set forth.

7. A device of the character described, comprising a frame with a stationary pinion attached thereto, a master wheel, a hollow shaft integral with the master wheel, a shaft carrying a small pinion, also a wheel having a pin or tooth projecting from its periphery, and a gear wheel mounted in the master wheel, the gear wheel meshing with the stationary pinion attached to the frame in which the master wheel rotates, a reel adapted to rotate upon and independently of the hollow shaft, driven by the small pinion on the shaft of the gear wheel, whereby the reel makes one revolution to a number of revolutions of the master wheel, a traversing mechanism whereby the thread is made to wind upon the reel, comprising a wheel operated by the pin rotatably mounted with the shaft of the gear wheel, and mounted transversely of the master wheel, a guide loop slidably mounted in a standard upon the master wheel, a transverse lever pivoted to a standard on the master wheel, and operated by the transverse wheel, and in turn operating the guide loop for winding the thread on the reel, in combination with a cocoon basin adapted to rotate in a contrary direction to that of the winding and reeling apparatus.

8. A silk twisting and winding or skeining device, comprising a frame, rotatable members mounted therein, the upper member consisting of a hollow shaft having a master wheel integral therewith, and the lower member consisting of a hollow shaft having a cocoon basin integral therewith, means whereby the rotatable members are made to operate in contrary directions, compartments and means for retaining cocoons therein, in the lower rotating member, a concentrating ring or loop on the lower member for bringing the filaments from the cocoons into alinement with the hollow shaft of the upper rotatable member, a reel on the upper rotating member, means whereby the reel is made to revolve once on its own axis while making several revolutions with the shaft of the upper rotating member, a guide pulley mounted to receive the twisted filaments from the hollow shaft of the upper rotating member, a traversing guide loop, a measuring wheel on an inclined axis, interposed between the guide pulley and the guide loop, and a measuring device operated by the measuring wheel, and which is adapted to ring a bell when a predetermined amount of thread has been wound upon the wheel.

9. A device for measuring and reeling silk into skeins, comprising a frame, a revolving cocoon basin, a hollow shaft having integral therewith a master wheel rotating in a contrary direction to that of the cocoon basin, a reel, comprising a hub, engaging the shaft of the master wheel, a rim with an internal gear and means for rotating the reel independently of the master wheel, a series of radially mounted arms on the reel, a bend in each arm whereby the arms are adapted to keep the skein from falling when loosened to be removed therefrom, one arm being pivoted to the rim and having a free end that may be removed from its socket in the hub, and the arm swung to relieve the tension on the skein, and a measuring device that is adapted to register the amount of thread in the skein and to ring a bell when the skein contains a predetermined amount of thread, substantially as set forth.

In testimony whereof, I affix my signature, in presence of two witnesses.

GEORGE ELIOT SLY.

Witnesses:
J. W. MASTER,
R. M. MOBIUS.