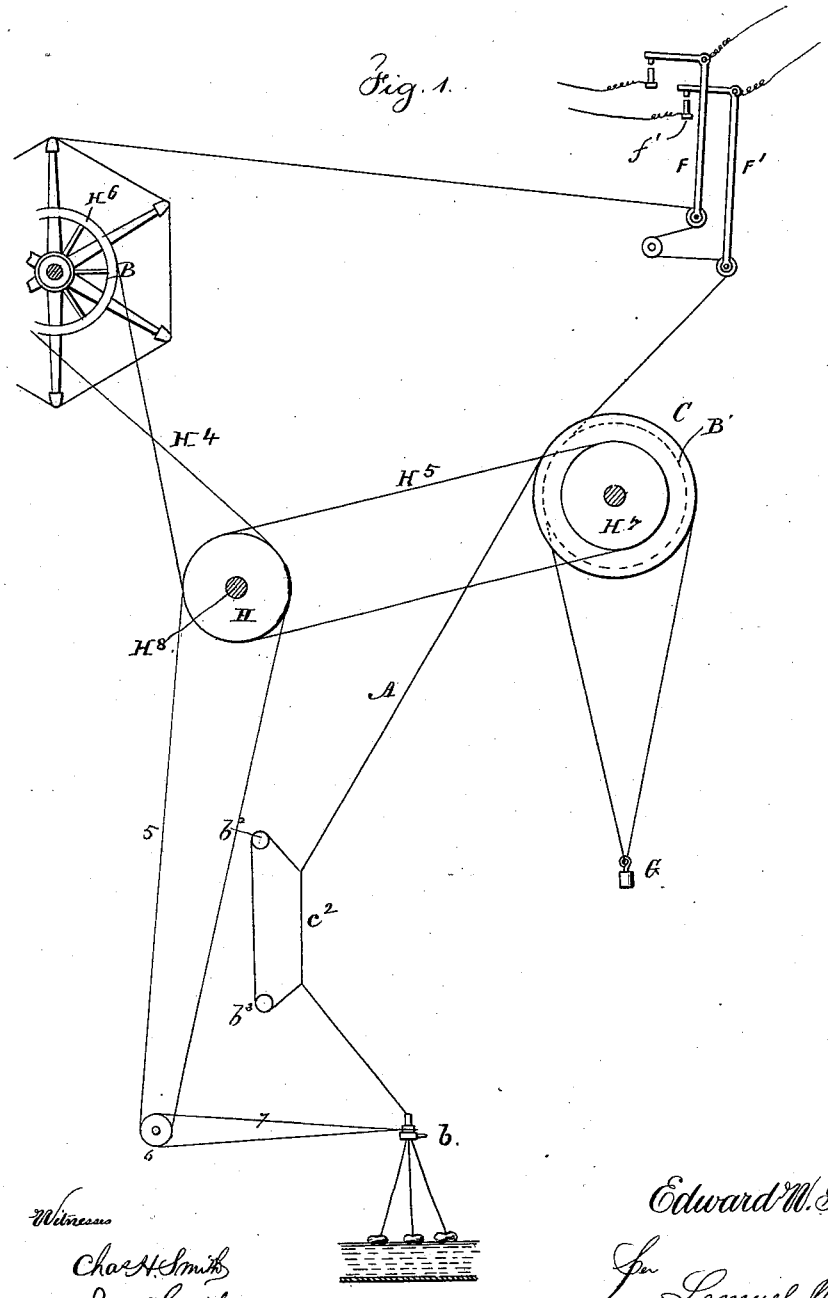
(No Model.) 2 Sheets—Sheet 1.

E. W. SERRELL, Jr.

SILK REELING MACHINE.

No. 334,620. Patented Jan. 19, 1886.

Fig. 1.



Witnesses
Chas. H. Smith
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Inventor
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(No Model.) 2 Sheets—Sheet 2.

E. W. SERRELL, Jr.

SILK REELING MACHINE.

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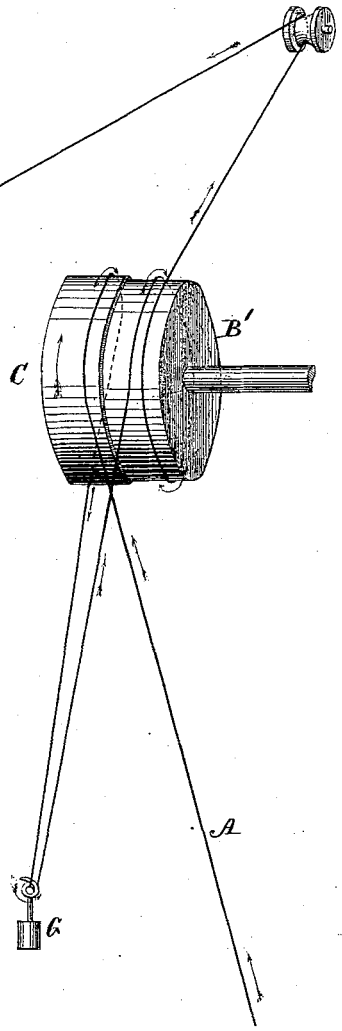
Fig. 2.



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UNITED STATES PATENT OFFICE.

EDWARD W. SERRELL, JR., OF NEW YORK, N. Y.

SILK-REELING MACHINE.

SPECIFICATION forming part of Letters Patent No. 334,620, dated January 19, 1886.

Application filed April 23, 1884. Serial No. 129,023. (No model.)

To all whom it may concern:

Be it known that I, EDWARD W. SERRELL, Jr., of the city, county, and State of New York, United States of America, temporarily residing at Chabeuil, in the Department of Drôme, Republic of France, have invented a new and useful Improvement in Silk-Reeling Machines, of which the following is a specification.

Automatic machinery has been used in which feeding-drums and reels have been employed, and in which the silk is stretched during its passage to the reel, as may be seen in my French patent deposited February 25, 1882, and granted May 9, 1882, No. 147,624; my Austrian patent granted May 17, 1882, No. 10,629, and my German patent granted March 28, 1882, No. 19,885, and in my corresponding United States application No. 129,196, filed April 25, 1884; but with the devices of aforesaid patents the silk is sometimes stretched more than is desirable. A reference is also hereby made to my United States application No. 129,021, filed April 23, 1884, for a description of similar machinery.

It is necessary for the clear understanding of my present invention to state that in the aforesaid machinery the thread of silk is considerably stretched or elongated in its passage from the filament-attaching device to the feeding-drum, in consequence of the tension required to draw the thread through the croisure and over the guides or rollers before arriving at said feeding-drum.

By my present invention I allow the thread to contract to its original length or condition, or nearly so, before it leaves the delivery-drum herein described, and consequently before the tension is applied between the delivery-drum and the reel to test the size and strength of the thread and to bring into action the devices that add filaments to the running thread when the latter falls below the required size and strength. I accomplish this result by means of two drums, around which the thread is passed before going to the winding-reel. One of said drums—the feeding-drum—is of greater diameter than the other or delivery drum. The thread coming from the croisure is first passed around the larger drum, then through a movable eye, and then around the smaller drum, from which the thread goes to the reel. As the surface of the larger drum travels faster than the surface of the smaller drum, the thread, as drawn through the croisure by the larger drum, is delivered by said larger drum to the smaller one faster than it is wound upon the smaller one; consequently the stretched or elongated thread has an opportunity to and does contract before it passes around the smaller drum.

In the drawings, Figure 1 is a diagram showing the manner of applying my improvement; and Fig. 2 is a perspective view of the drums, movable guide, thread, and the pulley of the regulating-lever.

The filaments of silk from cocoons in a basin of water pass through a device known as a "lance-bout," *b*, which consists of a rapidly-revolving cylinder, usually containing a perforated agate, through which the thread is led, and this cylinder is provided with hooks for catching and winding upon the running thread cocoon-filaments taken from a cocoon-magazine whenever the running thread falls below the required size and strength. This lance-bout and cocoon-magazine are fully described and shown in my said applications, and are not of themselves herein claimed.

The thread, after leaving the filament-attaching device *b*, makes the croisure at c^2 and then passes around the feeding-drum C. The croisure is formed by passing the thread from the lance-bout *b* up over the pulley b^2, then down and under the pulley b^3, and then making a few turns of the free end of the thread around that part of the thread that is between the lance-bout and the pulley b^2, the thread then going to the feeding-drum C. This croisure is well known, and the crossing of the threads may be in any desired manner.

The thread, after passing around the feeding-drum C, is led around a roller or guide, G, which is preferably upon a small hanging weight, and then around the delivery-drum B′, from which the thread passes over rollers or guides upon the levers F′ F, respectively, and thence to the reel B, upon which the thread is wound.

The drums C B′ are side by side upon the same shaft and are rotated at a regular speed, and the drum C is slightly larger than the drum B′; hence, as the thread is drawn

through the croisure by the larger drum, C, it is delivered by it toward the guide G at a greater rate of speed than that with which it is wound upon the drum B', the difference in speed corresponding to the difference of circumferences in the drums C B'. This difference of speed is determined by experiment, so as to be nearly equal in proportion to the amount of elongation existing in the fibers when they arrive at the drum C. The thread therefore regains its normal length and condition before being wound upon the drum B', and the elongation existing in it at A, between the croisure and drum C, is eliminated.

The reel B is revolved with a circumferential speed slightly faster than that of the surface-speed of the delivery-drum B'; hence the thread is stretched to a certain extent, and this tension of the thread, if the thread is of the standard size and strength, keeps the lever F' from its contact with the circuit-closing point *f'*; but if the thread falls below the standard size and becomes weaker its resistance is less, and it allows the lever to come in contact with *f'* and close an electric circuit containing a magnet, which operates devices that cause a filament or filaments to be added to the running thread until said thread is brought to the required size, when the increased strength of the thread gives the necessary resistance to move the lever F' and break the electric circuit, as fully set forth in my said applications.

I have shown a pulley, H, upon a continuously-revolving shaft, H^8, from which pulley, belts H^4 H^5 pass around pulleys H^6 H^7 upon the shafts of the reel B and drums B' C, respectively, as the means for rotating said reel and drums. The shaft H^8 may be the driving-shaft of the machine. I have also shown the belt 5, pulley 6, and cord or belt 7, as a means for revolving the lance-bout *b*.

The lever F closes an electric circuit and brings into action, if a thread breaks, the devices that stop the motion of the reel, which devices are also shown in my said applications.

My present invention acts to render uniform the stretching of the thread between the drum B' and the reel B, independent of the devices employed in connection with the thread between the drum and reel.

I do not herein claim the combination of the filament-attaching device, the drum to draw the thread through the croisure, the reel, and means for revolving the parts, as the same is set forth and claimed in my application No. 129,022, filed April 23, 1884.

I claim as my invention—

The combination, with the revolving filament-attaching device, of a feeding-drum for drawing the thread through the croisure, a second drum adjacent to and of less diameter than the feeding-drum, a movable guide for the thread to pass around between one drum and the other, a reel upon which the thread is wound, and means, substantially as specified, for revolving the reel and drums and stretching the thread, substantially as specified.

EDW. W. SERRELL, JR.

Witnesses:
EDWARD P. MACLEAN,
CHARLES F. THIRION.