

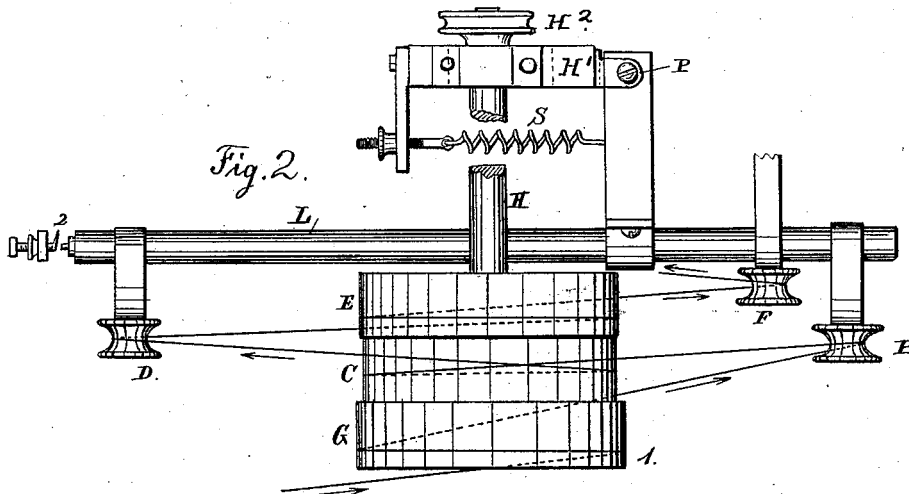
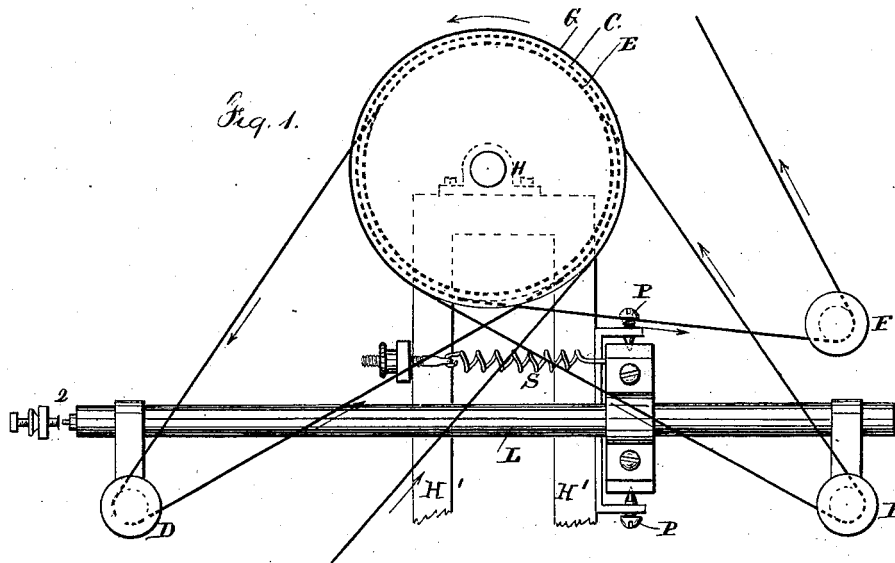
(No Model.)

2 Sheets—Sheet 1.

E. W. SERRELL, Jr.  
SILK REELING MACHINERY.

No. 334,617.

Patented Jan. 19, 1886.



Witnesses

Chas. H. Smith  
J. Stacy

Inventor

Edward W. Serrell Jr.

for Lemuel W. Serrell

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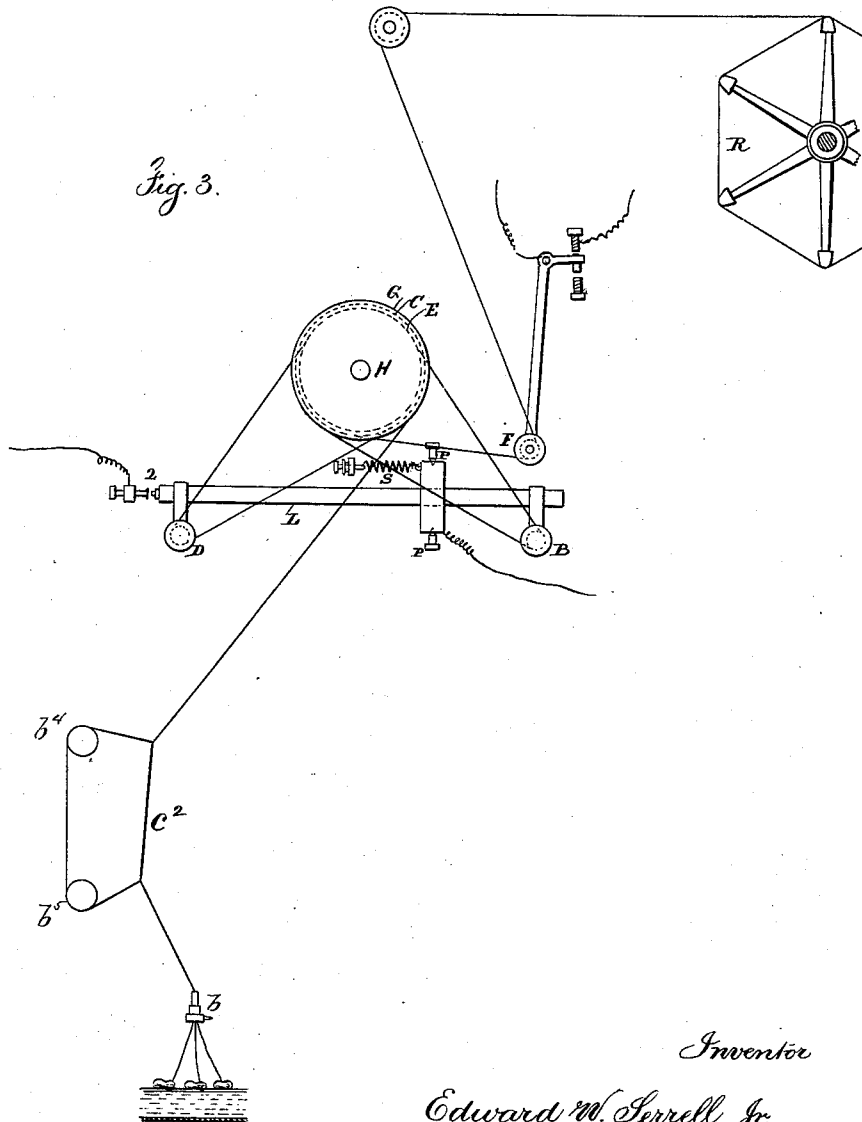
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# UNITED STATES PATENT OFFICE.

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

## SILK-REELING MACHINERY.

SPECIFICATION forming part of Letters Patent No. 334,617, dated January 19, 1886.

Application filed April 23, 1884. Serial No. 129,019. (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, now temporarily residing at Chabeuil, in the Department of Drôme, Republic of France, have invented a new and useful Improvement in Silk-Reeling Machinery, of which the following is a specification.

In Letters Patent granted to me in France May 9, 1882, No. 147,624, deposited February 25, 1882; in Austria May 17, 1882, No. 10,629, and in German Empire March 28, 1882, No. 19,885, and in my corresponding United States application, No. 129,196, a silk-reeling apparatus is shown in which an electric device is employed to bring into action mechanism that adds a cocoon filament to the running thread whenever said running thread *b* comes smaller than the required size, said electric device being operated by the thread, to which a constant tension is applied, and a reference is hereby made to said patents and application, and also to my United States application for patent, No. 129,021, filed April 23, 1884, for a more detailed description of the devices and mode of operation.

My present invention consists of a combination of devices whereby the elongation or stretching of the thread, caused by drawing it through the croisure and through or over guides, &c., before reaching the feeding-drum, is so reduced and compensated that the thread is in its normal condition, or nearly so, when it is subjected to the subsequent constant stretching for determining the resistance which the thread will offer to elongation, all as hereinafter explained.

In the drawings, Figure 1 shows a side elevation of the pulleys, drums, and lever employed by me; Fig. 2, a plan of the same; and Fig. 3, a diagram representing the essential parts of a silk-reeling machine, and illustrating the mode of operation of the present invention.

The thread to be reeled is composed of filaments from the cocoons in a water-vessel, and the thread, after leaving the filament-attaching device *b*, makes the croisure at *c*, and then goes to the drum *G*.

The filament-attaching device *b* is similar to the one shown in my aforesaid applications,

and is composed of a revolving cylinder containing a perforated agate, through which the thread passes, and upon the exterior of the cylinder there is a hook that takes a cocoon filament from a cocoon-magazine and twists it around the running thread whenever said running thread falls below the standard size and strength.

The croisure is formed by passing the thread from the filament-attaching device *b* up over the guide or pulley *b*<sup>4</sup>, then down under the guide or pulley *b*<sup>5</sup>, and then making a few turns of the free end of the thread around that part of the thread going from *b* to *b*<sup>4</sup>, and then leading said free end to the drum *G*. This croisure is for drying and consolidating the thread, and is of ordinary character.

The drum *G* and its adjacent drums *C* *E* are upon a shaft, *H*, supported in a suitable frame, *H*<sup>1</sup>, and driven by competent power applied to a pulley, *H*<sup>2</sup>.

*L* is the regulating lever or bar, which I prefer to make horizontal, and which is capable of moving or swinging upon pivots *P*, supported by the frame *H*<sup>1</sup>.

*B* *D* are pulleys at opposite ends of the lever *L*, and *S* is a spring which tends to move the lever in a direction such as to draw the pulley *D* away from the drums *G* *C* *E*. The drums *G* *C* *E* are mounted upon the shaft *H*, as aforesaid, and this shaft remains in a fixed position in the frame *H*<sup>1</sup>. The drum *C* is the smallest, the drum *G* is the largest, and the drum *E* is of intermediate size, and the thread is passed over or around these drums in the order shown by the arrows upon the different parts of the thread, and as next described.

The thread having arrived from the croisure or drying device at the point *1*, is first passed around the drum *G*, thence to the pulley or guide *B*, then to the center drum, *C*, around which it takes a turn, thence to the pulley or guide *D*, thence around the drum *E* to the pulley *F*, and from the latter to the reel *R*.

When the thread has thus been placed and the drums set in motion, the operation is as follows: The thread is drawn by and wound upon the drum *G* and delivered by it to the pulley or guide *B* with a speed equal to that of the periphery of the drum *G*. It is then wound upon the drum *C* with a speed somewhat less than that of the drum *G*. The rela-

tive sizes of the drums C and G are such that the thread is allowed to contract to its normal condition, or nearly so, before being wound upon the drum C, such thread having been  
 5 elongated in reaching the point marked 1 by the tension necessary to draw the thread through the croisure, guides, &c. After having passed around the drum C, the thread goes around the pulley or guide D, and then to the  
 10 drum E. The thread from the drum G, passing to the guide or pulley B, goes off in an opposite direction to the thread from the drum C to the pulley D; hence any tendency to move  
 15 tension existing at the point 1 is neutralized, because the forces act in opposite directions. The drum E, being of greater diameter than that of the drum C, winds the thread with a greater speed than that with which it is de-  
 20 livered from the drum C; consequently the thread is wound upon E faster than it is supplied by C, and the thread is elongated or stretched in its length in passing the pulley D, from which it is apparent that a pull is ap-  
 25 plied to the pulley D and lever L which varies in proportion to the sectional area and strength of the thread. When the thread is of the standard size, its resistance is such that the tension of the thread on the pulley D  
 30 draws the end of the lever L away from the contact-point 2; but if the thread diminishes in size it becomes weaker and its resistance is so lessened that the spring S swings the lever on its pivots P and causes the end of the lever  
 35 to make contact with 2, and thereby close an electric circuit containing an electro-magnet, which brings into operation devices that cause a cocoon filament or filaments to be added to the running thread until the thread becomes  
 40 sufficiently strong and possesses the necessary resistance to overcome the spring S and cause the lever to move away from the contact 2 and break the electric circuit.

The electrical devices that are brought into  
 45 action on closing the circuit, and which act upon the filament-supplying mechanism, are fully shown in my aforesaid applications, and do not require to be repeated herein. After the thread has passed the drum E it goes around  
 50 the pulley F on a lever, which I prefer to use as the faller for an electric stop-motion. This stop-motion may be of any desired kind. I have shown a stop-motion in my aforesaid applications that may be employed; but this de-  
 55 vice is not a necessary part of my present invention.

It is to be understood that the drum G draws the thread from the cocoons and through the

croisure, and the strain in so doing does not become a factor that influences the regulating  
 60 device, because the drum C, having a less circumference than the drum G, does not draw the thread along as fast as it is delivered from the drum G; hence the thread has an oppor-  
 65 tunity to contract and assume its normal condition before the tension is applied by the drum E drawing upon the thread faster than it is delivered by the drum C. Between the drums  
 C and E the tension required for the "serigraphic action," as I term it, is applied to the  
 70 thread, and this acts upon the pulley or guide D to cause the filament-supplying device to be brought into action and add to the thread additional cocoon filaments as soon as the  
 thread passing from C to E becomes smaller  
 75 and weaker than the standard size and strength.

The drums G and C, separately considered, are not herein claimed by me, as they form the subject of my application No. 129,023, filed  
 April 23, 1884. Neither do I herein claim the  
 80 drum to draw the thread through the croisure, as the same is set forth in my application No. 129,022, filed April 23, 1884.

I claim as my invention—

1. The combination, with the drums G, C,  
 85 and E, shaft H, and means for rotating the same, of the lever L and the pulleys or guides B and D, supported by such lever L, and the spring S, substantially as and for the purposes  
 set forth. 90

2. The combination, with the drums E C G,  
 of different diameters, and means for revolving the same, of pulleys or guides D B, around  
 which the thread is passed from the drums in  
 opposite directions, a pivoted support for such  
 95 guides D B, and a spring to apply pressure to the pivoted support in a direction opposite to the pull of the thread on the guide D, substantially  
 as specified.

3. The combination of a feeding-drum to  
 100 draw the thread through the croisure, a second and smaller drum that acts with the first to reduce the elongation of the thread, caused by drawing it through the croisure, a third  
 drum of intermediate size that acts with the  
 105 smaller drum to stretch the thread a constant amount, a guide and support that move under variations in the tension of the thread as stretched by the third drum, and means for  
 rotating the drums, substantially as and for  
 110 the purposes set forth.

EDWARD W. SERRELL, JR.

Witnesses:

EDWARD P. MACLEAN,  
 CHARLES T. THIRION.