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

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No. 334,620.
UNITED STATES PATENT OFFICE.

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

SILK-REELING MACHINE.

Application filed April 23, 1884. Serial No. 159,683. (No model.)

To all whom it may concern:

Be it known that I, EDWARD W. SERRELL, 5
Jr., of the city, county, and State of New York, 10
United States of America, temporarily residing 15
at Chabani, in the Department of Drôme, 20
Republic of France, have invented a new and 25
useful Improvement in Silk-Reeling Machines, 30
of which the following is a specification.

Automatic machinery has been used in 35
which feeding drums and reels have been em- 40
ployed, and in which the silk is stretched 45
during its passage to the reel, as may be seen 50
in my French patent deposited February 25, 55
1882, and granted May 9, 1882, No. 147,624; 60
my Austrian patent granted May 17, 1882, 65
No. 10,620, and my German patent granted 70
March 28, 1882, No. 19,885, and in my cor- 75
responding United States application No. 129,186, filed April 25, 1884; but with the de- 80
vices of aforesaid patents the silk is some- 85
times stretched more than is desirable. A 90
reference is also hereby made to my United 95
States application No. 129,021, filed April 23, 100
1884, for a description of similar machinery.

It is necessary for the clear understanding 105
of my present invention to state that in the 110
aforesaid machinery the thread of silk is con- 115
siderably stretched or elongated in its passage 120
from the filament-attaching device to the feed- 125
ing-drum, in consequence of the tension re- 130
quired to draw the thread through the cros- 135
sure and over the guides or rollers before ar- 140
riving at said feeding drum.

By my present invention I allow the thread 145
to contract to its original length or condition, 150
or nearly so, before it leaves the delivery-drum 155
herein described, and consequently before the 160
tension is applied between the delivery-drum 165
and the reel to test the size and strength of 170
the thread and to bring into action the devices 175
that add filaments to the running thread when 180
the latter falls below the required size and 185
strength. I accomplish this result by means 190
of two drums, around which the thread is 195
passed before going to the winding-reel. One 200
of these drums—the feeding drum—is of greater 205
diameter than the other or delivery drum. 210
The thread coming from the crossette is first 215
passed around the larger drum, then through 220
a movable eye, and then around the smaller 225
drum, from which the thread goes to the reel.

As the surface of the larger drum travels 230
faster than the surface of the smaller drum, 235
the thread, as drawn through the crosssette by 240
the larger drum, is delivered by said larger 245
drum to the smaller one faster than it is 250
wound upon the smaller one; consequently the 255
stretched or elongated thread has an opportu- 260
nity to and does contract before it passes 265
around the smaller drum.

In the drawings, Figure 1 is a diagram 270
showing the manner of applying my improve- 275
ment; and Fig. 2 is a perspective view of the 280
drums, movable guide, thread, and the pulley 285
of the regulating-lever.

The filaments of silk from cocoons in a basin 290
of water pass through a device known as a 295
"lance-boat," b, which consists of a rapidly- 300
revolving cylinder, usually containing a perfor- 305
ated gate, through which the thread is led, 310
and this cylinder is provided with hooks for 315
catching and winding upon the running thread 320
cocoon-filament taken from a cocoon-magazine 325
whenever the running thread falls below 330
the required size and strength. This lance- 335
boat and cocoon-magazine are fully described 340
and shown in my said applications, and are 345
not of themselves herein claimed.

The thread, after leaving the filament-at- 350
taching device b, makes the crosssette at c e 355
and d, then passes around the feeding drum 360
C. The crosssette is formed by passing the thread 365
from the lance-boat b up over the pulley b', 370
down and under the pulley b", and then mak- 375
ing a few turns of the free end of the thread 380
around that part of the thread that is between 385
the lance-boat and the pulley b", the thread 390
then going to the feeding drum C. This cross- 395
sette is well known, and the crossing of the 400
threads may be in any desired manner.

The thread, after passing around the feed- 405
ing-drum C, is led around a roller or guide, 410
G, which is preferably upon a small hanging 415
weight, and then around the delivery- 420
drum B', from which the thread passes over 425
rollers or guides upon the levers F, F', respec- 430
tively, and thence to the reel B, upon which 435
the thread is wound.

The drums C B' are side by side upon the 440
same shaft and are rotated at a regular speed, 445
and the drum C is slightly larger than the 450
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 cir-
cumferences 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 con-
dition before being wound upon the drum B',
and the elongation existing in it at A, be-
tween the croisure and drum C, is eliminated.

The reel B is revolved with a circumferen-
tial speed slightly faster than that of the sur-
face-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 le-
ver F' from its contact with the circuit-clos-
ing point f'; but if the thread falls below the
standard size and becomes weaker its resist-
ance 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 in-
creased strength of the thread gives the neces-
sary 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 continu-
ously-revolving shaft, H', from which pulley,
belts H' H' pass around pulleys H' H' upon
the shafts of the reel B and drums B' C, re-
spectively, as the means for rotating said reel
and drums. The shaft H' may be the driving-
shaft of the machine. I have also shown the 40
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 de-
vices that stop the motion of the reel, which 45
devices are also shown in my said applica-
tions.

My present invention acts to render uni-
form the stretching of the thread between the
drum B' and the reel B, independent of the 50
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 55
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 fila-
ment-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 65
and the other, a reel upon which the thread is
wound, and means, substantially as specified,
for revolving the reel and drums and stretch-
ing the thread, substantially as specified.

EDW. W. SERRELL, Jr.

Witnesses:

EDWARD P. MACLEAN,
CHARLES F. THIRION.