E. W. SERRELL, Jr.

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

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Application filed September 10, 1887. Serial No. 249,291. (No model.) Patented in England June 30, 1887, No. 9,074; in France June 30, 1887, No. 184,594; in Belgium June 30, 1887, No. 78,008; in Italy June 30, 1887, XLI, 423; in Germany July 19, 1887, No. 45,582; in Turkey July 30, 1887, No. 86; in Austria-Hungary November 15, 1887, No. 2,222/87; in Spain November 20, 1887, No. 7,335; in India March 7, 1888, No. 243, and in China April 5, 1888.

To all whom it may concern:

Be it known that I, EDWARD WILLIAM SERRELL, Jr., civil engineer, of New York, United States of America, temporarily residing in the Department of the Drôme, France, have invented an Improvement in Apparatus for Reeling Silk from the Cocoon, of which the following is a specification.

Letters Patent for this invention have been granted to me in the following countries, viz: Great Britain, No. 9,374, dated June 30, 1887; France, No. 184,594, dated June 30, 1887; Belgium, No. 78,008, dated June 30, 1887; Italy, volume 43, No. 482, dated June 30, 1887; Germany, No. 45,582, dated July 19, 1887; Turkey, No. 86, dated July 30, 1887; Austria-Hungary, No. 2,222, dated November 15, 1887; Spain, No. 7,335, dated November 20, 1887; India, Register 243 of 1887, dated March 7, 1888, and in China, dated April 5, 1888, no number.

My invention is for effecting automatically the operation, hitherto effected by hand, of filling with cocoons the cocoons-holders or magazines for reeling silk from the cocoon.

In carrying my invention into practice I employ a cocoons-holder substantially similar to that shown in my United States Patent No. 320,709, with the exception that the cells in which the cocoons are placed by hand are replaced by conical pockets. This magazine is placed in an inclined position between two basins, called the "charging-basin" and the "reeling-basin," in such a manner that the lowermost part of the magazine dips into the water contained in the charging-basin. A circulation of the water is created in the charging-basin, and the cocoons floating thereon are driven automatically into a transferring device formed of a cocoons-holder or magazine with pockets, some of which are partially under water. An intermittent rotation is imparted to the magazine or cocoons-holder for the purpose of bringing successively the filled pockets uppermost and above the reeling-basin, and there is a discharging mechanism by which the cocoons are thrown successively, as required, out of the pocket that is uppermost into the reeling-basin. The cocoons thus ejected falls into the water contained in the reeling-basin, with its filament in the path of the finger on the revolving lance-bout, so as to be added to the running silk thread in process of reeling whenever a cocoons-filament is required.

In the drawings, Figure 1 is a sectional elevation, and Figure 2 a plan view, showing a charging-basin, part of a reeling-basin, and a pocket-magazine or cocoons-holder, with accessory parts. Figure 3 is a section of the cocoons-holder and portions of the basins. Figure 4 is an elevation, partly in section, of the cocoons-holder and of the devices for rotating said holder and for ejecting the cocoons. Figure 5 is an elevation of the device for rotating the cocoons-holder and ejecting the cocoons. Figure 6 is a sectional plan of the device for lifting the cocoons in the pocket. Figure 7 is a sectional plan of the device for unlocking, turning, and locking the cocoons-holder; and Figure 8 is a sectional plan of the device for ejecting the cocoons from its pocket. The magazine 1 has a number of pockets arranged circumferentially. Each pocket is formed by a conical wall and a rod 2. The magazine 1 is mounted on an inclined shaft 3, secured to a frame, 4, and its lowermost end dips into hot water contained in the charging-basin 5. The basin 5 is charged with cocoons, which have previously undergone the requisite operations for preparing them for reeling. The charging-basin 5 is provided with a casing 6, containing a screw 7, or any other equivalent device capable of producing an agitation or current of water. The agitation produced thereby causes the water to circulate from the casing 6 through openings 8, 9, and one through the magazine 1, through such of the pockets thereof as are partially under water, and then under a false bottom 9, back to the casing 6. In order to prevent the cocoons from collecting in one corner of the basin 5 a supplementary current of water, led at 10 from the casing 6 through a pipe 11, may be caused to issue through the perforations near the end of the said pipe 11, as shown by the arrows in Figure 2. The supplementary pipe 11 may be placed in any desired position in the water of the charging-basin.
the basin and provided with any desired
two number of discharge-offices.
12 is the driving-shaft of the screw 7.
The ends of the filaments of cocoons float-

ing on the water of the charging-basin are

attached to a peg, 13, placed at any suitable

point above the basin. The rim 14 of the

magazine 1 may be serrated, so as to catch the

filaments from the cocoons in the respective

pockets between or against the teeth of the

said rim 14.

I shall now proceed to describe the me-

chanical contrivances which I prefer to em-

ploy in connection with the magazine. The

operations are four in number: first, the maga-

azine is unlocked; second, the magazine is ro-

tated a fraction of a revolution; third, the

magazine is relocked, and, fourth, the cocoon

contained in the uppermost pocket, Fig. 4, is

ejected from said pocket and falls onto

the water contained in the reeling-basin 15.

These four operations take place successively

and are derived from the first-motion shaft

16 of the machine.

Unlocking and relocking the magazine.—17

is a tooth-wheel formed with or attached to

the hub 18 of the magazine. The magazine

is held locked by a catch-lever, 19, pivoted at

20 upon the stationary frame 4, and acted

on by a spring, 21, tending to constantly

keep the magazine locked. A temporary dis-

engagement of the catch-lever 19 is effected

by a pin, 22, forming part of a collar, 23, fixed

to the driving-shaft 16. The pin 22 when

rotated with the shaft 16 comes in contact

with the lever 19 and raises it for a sufficient

length of time to allow of the magazine being

rotated, as hereinafter described. As soon as

the magazine has been rotated, the pin 22

leaves the catch-lever 19 and the latter again

locks the magazine.

Rotating the magazine.—The rotation of

the magazine 1 is effected by a tooth, 24, form-

ing part of a collar, 25, fixed to the driving-

shaft 16. The tooth 24 rotates the magazine

one tooth at a time.

Rejecting the cocoon out of the uppermost

pocket.—The cocoon contained in the upper-

most pocket of the magazine 1 is thrown out

by two distinct operations, viz: raising the

cocoon until it is out of the pocket, then mov-
ing it horizontally toward the reeling-basin 15.

The raising of the cocoon out of its pocket

is effected by means of a bent arm, 26, piv-

oted at 27, which arm 26 is depressed by a
cam, 28, acting against the end of a pro-jev-

tion, 29, fixed on the same axis 27 as the arm

26, and is raised by a spiral spring, a, slipped

onto the axis 27. When the cocoon has been

raised out of and is above the pocket, it is

conducted by a dome-shaped piece, 30, secured
to an arm, 31, pivoted at 32. When the dome-

shaped piece 30 has moved from the position

shown in full lines to that shown in dotted

lines, Fig. 4, the cocoon is allowed to fall

through a funnel-shaped guide, 33, onto the

water of the reeling-basin 15. The motion of

the dome-shaped piece 30 is derived from a

cam, 34, fixed on the driving-shaft 16, which

cam 34 acts against an arm, 35, pivoted at 36,

the free end of which is forked to engage the

shank of the arm 31 and move it together

with the dome-shaped piece 30. A spiral

spring, 37, slipped over the axis 36, tends to

constantly keep the dome-shaped piece 30 in

the position shown in Fig. 4 in full lines.

It is to be understood that each time a co-
ocoon is required for the "lance-bout," Figs.

1 and 2, motion is communicated to the shaft

16 to turn the cocoon-holder 1 and eject a co-
ocoon into the basin 15, with its filament

within the range of the finger upon the revolving

lance-bout; but my present invention does

not relate to the means for rotating the shaft

16, and I refer to my application No. 251,250

85 for a description of devices for rotating said

shafts.

I claim as my invention—

1. The combination, in a filament-supply-
ing apparatus, of a charging-basin containing

water to float the cocoons, a wheel for giving

motion to the water, a pipe or false bottom

for the return of the water, and a magazine

having pockets into which the cocoons are

floated successively by the action of the wa-

ter, and mechanism, substantially as spec-

dified, for discharging the cocoons from the

magazine, and a reeling-basin into which such

cocoons are discharged, substantially as set

forth.

2. The charging-basin 5, to contain wa-

ter in which the cocoons are floated, in com-

bination with the pipe 11, for conveying a sup-

plemental current of water, the return-chan-

nel below the false bottom 9, for the water, a

casing 6, a motor, 7, for causing the water to

circulate, and a magazine into which the co-

coons are floated, substantially as set forth.

3. The revolving wheel or motor 7 and the

charging-basin 5, near one end of which the

motor-wheel is placed, a case for said motor-

wheel having an opening at 8, a false bottom,

9, beneath which the water returns to the mo-

tor-wheel, a pipe, 11, having openings for the

supplemental currents of water, and a maga-

azine near the other end of the basin and con-

taining pockets into which the cocoons are

floated, substantially as set forth.

4. The combination, with the reeling-basin

and filament-supplying device, of a charging-

basin for receiving the cocoons, a magazine

for receiving the cocoons in the charging-bas-

in, mechanism for giving motion to the wa-
ter in the charging-basin to float the cocoons

into the magazine, and mechanism for deliv-

ering the cocoons successively from the mag-

azine into the reeling-basin, substantially as

set forth.

5. The combination, with the magazine hav-
ing pockets, of the toothed wheel 17, a catch-

lever, 19, for holding the magazine, the re-

volving shaft 16 and pin 22, for moving the

tooth 19 and unlocking the magazine, the

tooth 24, for turning the magazine, the spring
a and arm 26, for raising the cocoon from the upper pocket in the magazine, the cam 28, for giving motion to the arm 26, the dome 30 and arm 31, and the mechanism for moving the same to project the cocoon into the reeling-basin, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

EDWARD WILLIAM SERRELL, Jr.

Witnesses:
ROBT. M. HOOPER,
JOS. B. BOURNE.