(No Model.) 3 Sheets—Sheet 1.

E. W. SERRELL, Jr.

APPARATUS FOR REELING SILK FROM THE COCOON.

No. 399,937. Patented Mar. 19, 1889.

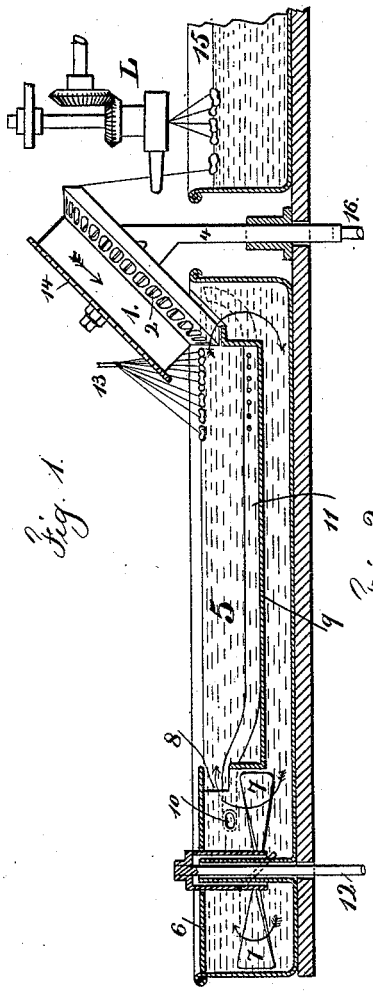

Fig. 1.

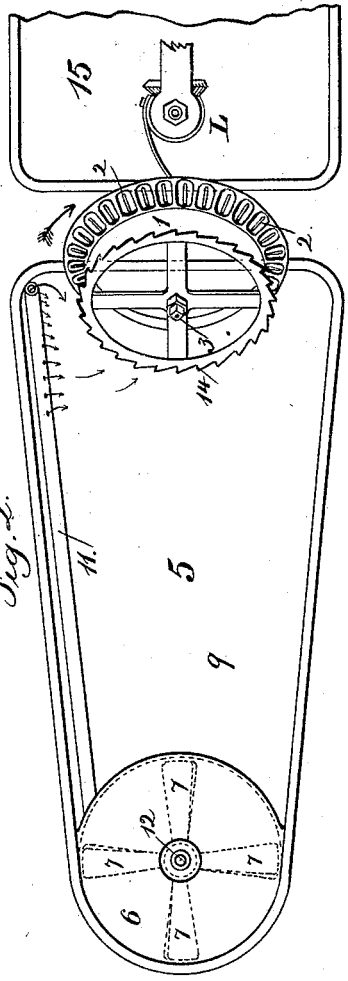

Fig. 2.

Witnesses,
Chas. H. Smith
W. L. Serrell

Inventor
Edward W. Serrell Jr
by Lemuel W. Serrell
atty

(No Model.) 3 Sheets—Sheet 2.

E. W. SERRELL, Jr.

APPARATUS FOR REELING SILK FROM THE COCOON.

No. 399,937. Patented Mar. 19, 1889.

Fig. 4.

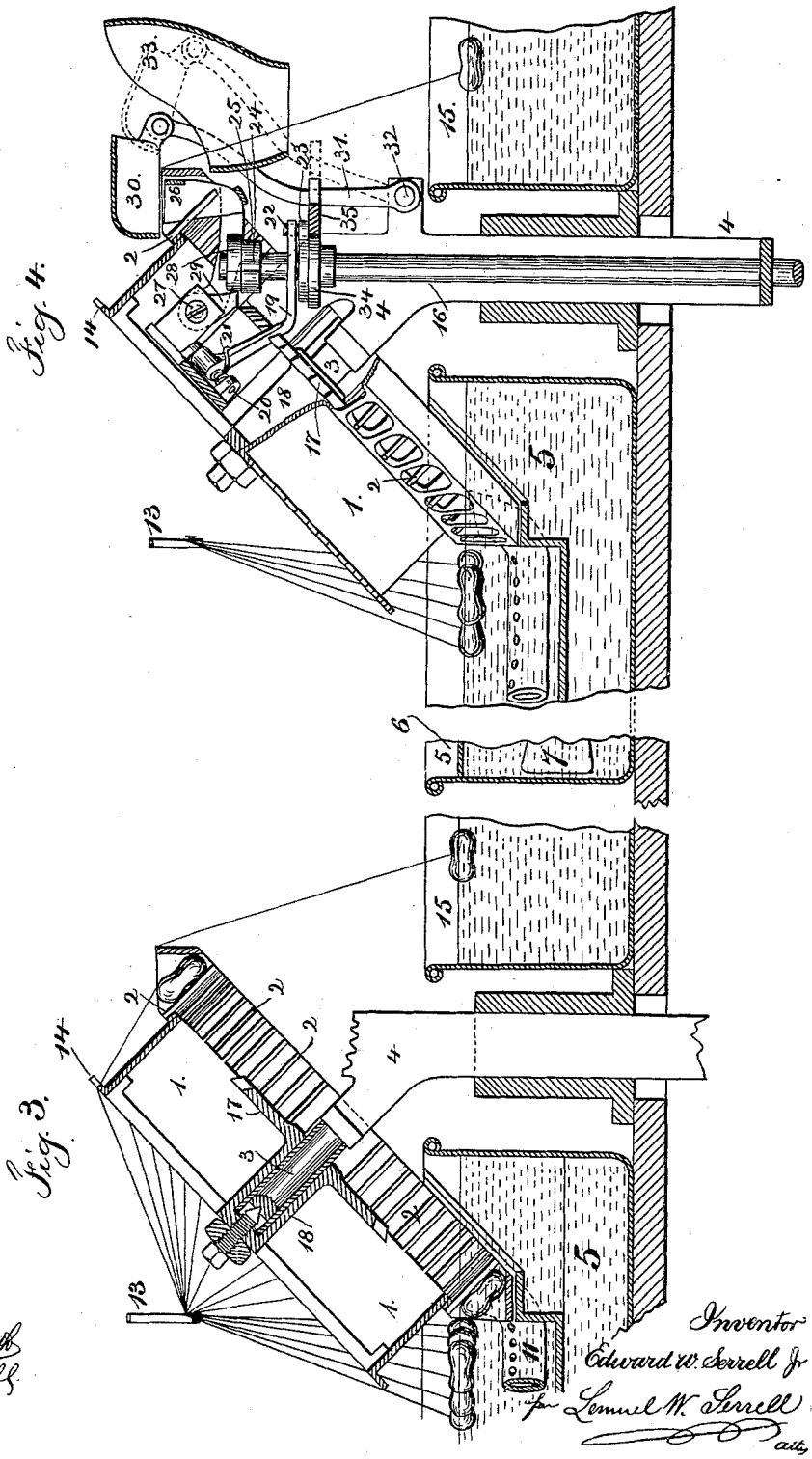

Fig. 3.

Witnesses
Chas. H. Smith
W. L. Serrell

Inventor
Edward W. Serrell Jr
by Samuel W. Serrell
Atty

(No Model.) 3 Sheets—Sheet 3.

E. W. SERRELL, Jr.

APPARATUS FOR REELING SILK FROM THE COCOON.

No. 399,937. Patented Mar. 19, 1889.

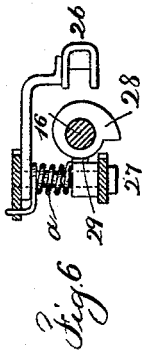

Fig. 6.

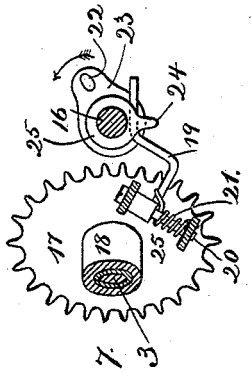

Fig. 7.

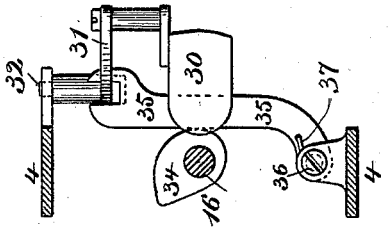

Fig. 8.

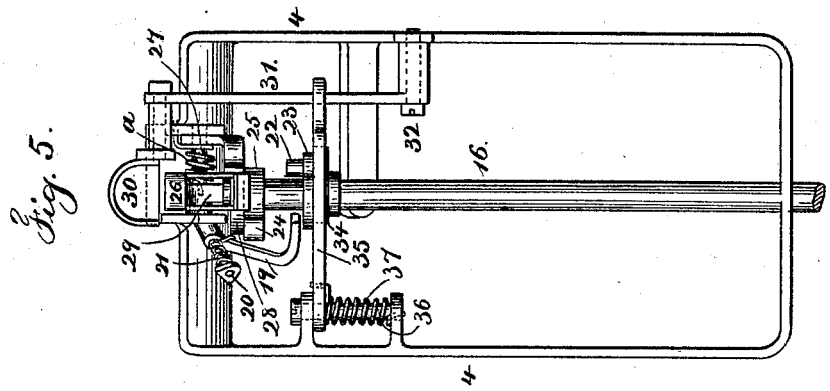

Fig. 5.

Witnesses:

Chas. N. Smith
W. L. Serrell

Inventor.

Edward W. Serrell Jr
for Lemuel W. Serrell
atty

UNITED STATES PATENT OFFICE.

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

APPARATUS FOR REELING SILK FROM THE COCOON.

SPECIFICATION forming part of Letters Patent No. 399,937, dated March 19, 1889.

Application filed September 10, 1887. Serial No. 249,291. (No model.) Patented in England June 30, 1887, No. 9,274; in France June 30, 1887, No. 184,534; in Belgium June 30, 1887, No. 78,008; in Italy June 30, 1887, XLIII, 482; in Germany July 19, 1887, No. 43,562; in Turkey July 30, 1887, No. 86; in Austria-Hungary November 15, 1887, No. 2,322/37; in Spain November 20, 1887, No. 7,233; 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 Chabeuil, 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. 9,274, dated June 30, 1887; France, No. 184,534, dated June 30, 1887; Belgium, No. 78,008, dated June 30, 1887; Italy, volume 43, No. 482, dated June 30, 1887; Germany, No. 43,562, dated July 19, 1887; Turkey, No. 86, dated July 30, 1887; Austria-Hungary, No. 2,322, Tome 37, dated November 15, 1887; Spain, No. 7,233, 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 cocoon-holders or magazines for reeling silk from the cocoon.

In carrying my invention into practice I employ a cocoon-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 cocoon-holder or magazine with pockets, some of which are partially under water. An intermittent rotation is imparted to the magazine or cocoon-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 cocoon 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 cocoon-filament is required.

In the drawings, Figure 1 is a sectional elevation, and Fig. 2 a plan view, showing a charging-basin, part of a reeling-basin, and a pocket-magazine or cocoon-holder, with accessory parts. Fig. 3 is a section of the cocoon-holder and portions of the basins. Fig. 4 is an elevation, partly in section, of the cocoon-holder and of the devices for rotating said holder and for ejecting the cocoons. Fig. 5 is an elevation of the devices for rotating the cocoon-holder and ejecting the cocoons. Fig. 6 is a sectional plan of the device for lifting the cocoon in the pocket. Fig. 7 is a sectional plan of the device for unlocking, turning, and locking the cocoon-holder; and Fig. 8 is a sectional plan of the device for ejecting the cocoon 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, Fig. 1, toward 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 Fig. 2. The supplementary pipe 11 may be placed in any desired position in the water of

the basin and provided with any desired number of discharge-orifices.

12 is the driving-shaft of the screw 7.

The ends of the filaments of cocoons floating 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 mechanical contrivances which I prefer to employ in connection with the magazine. The operations are four in number: first, the magazine is unlocked; second, the magazine is rotated a fraction of a revolution; third, the magazine is relocked, and, fourth, the cocoon contained in the uppermost pocket, Fig. 4, is ejected from the 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 upon by a spring, 21, tending to constantly keep the magazine locked. A temporary disengagement 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, forming part of a collar, 25, fixed to the driving-shaft 16. The tooth 24 rotates the magazine one tooth at a time.

Ejecting the cocoon out of the uppermost pocket.—The cocoon contained in the uppermost pocket of the magazine 1 is thrown out by two distinct operations, viz: raising the cocoon until it is out of the pocket, then moving 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, pivoted at 27, which arm 26 is depressed by a cam, 28, acting against the end of a projection, 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 cocoon is required for the "lance-bout" L, Figs. 1 and 2, motion is communicated to the shaft 16 to turn the cocoon-holder 1 and eject a cocoon 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. 251,299 for a description of devices for rotating said shaft.

I claim as my invention—

1. The combination, in a filament-supplying 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 water, and mechanism, substantially as specified, 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 water in which the cocoons are floated, in combination with the pipe 11, for conveying a supplemental current of water, the return-channel 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 cocoons 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 motor-wheel, a pipe, 11, having openings for the supplemental currents of water, and a magazine near the other end of the basin and containing 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-basin, mechanism for giving motion to the water in the charging-basin to float the cocoons into the magazine, and mechanism for delivering the cocoons successively from the magazine into the reeling-basin, substantially as set forth.

5. The combination, with the magazine having pockets, of the toothed wheel 17, a catch-lever, 19, for holding the magazine, the revolving shaft 16 and pin 22, for moving the lever 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.