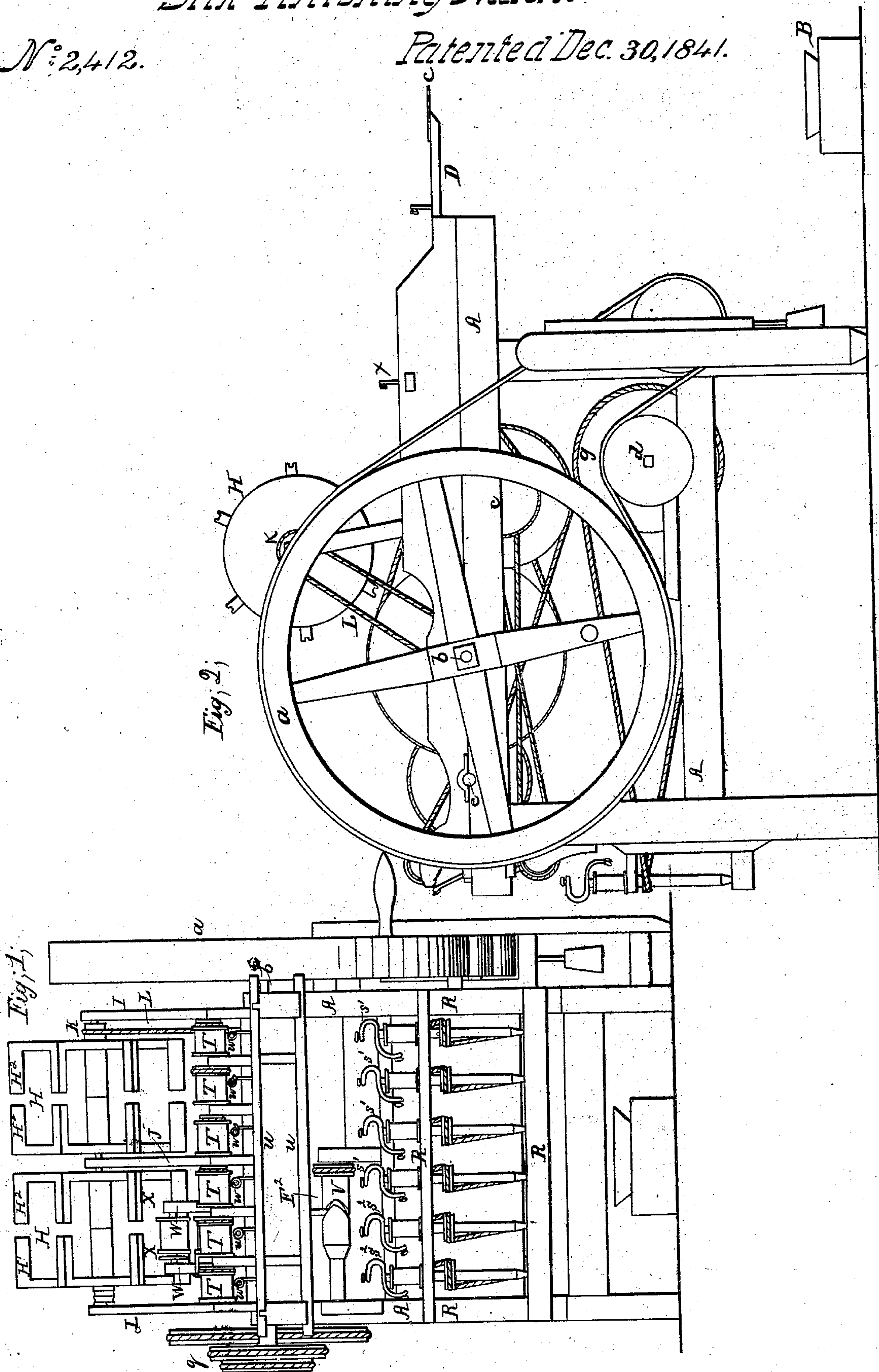


Sheet 1-2 Sheets.

*Silk Finishing Mach.*

*Patented Dec. 30, 1841.*



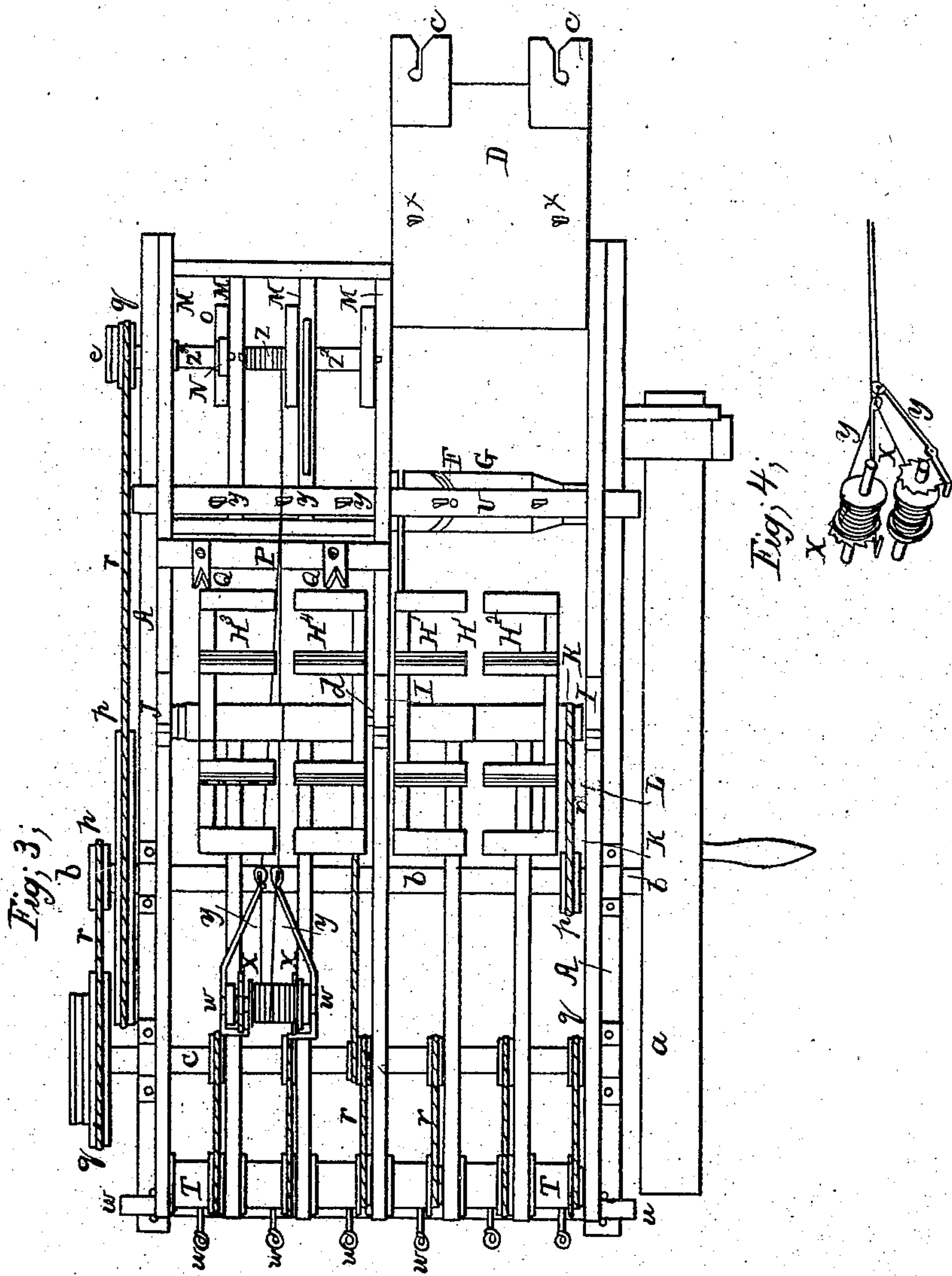
Sheet 2-2 Sheets.

I. White.

Silk Finishing Mach.

N<sup>o</sup> 2,412.

Patented Dec. 30, 1841.





# UNITED STATES PATENT OFFICE.

THOMAS WHITE, OF MOUNT PLEASANT, OHIO.

## MACHINERY FOR FINISHING SILK.

Specification of Letters Patent No. 2,412, dated December 30, 1841.

*To all whom it may concern:*

Be it known that I, THOMAS WHITE, of Mount Pleasant, Jefferson county, State of Ohio, have invented a new and useful Machine for Finishing Silk Directly from the Cocoon Either for the Needle or for the Loom, which is described as follows, reference being had to the annexed drawings of the same, making part of this specification, in which—

Figure 1 is an elevation of the rear of the machine—Fig. 2 an elevation of the left side standing in front facing the machine—Fig. 3 a view of the top, or bird's eye view—Fig. 4 is a perspective view of the bobbins with ratchet wheels on their axles.

Similar letters refer to corresponding parts.

This machine consists of a rectangular frame A, of suitable size, strength, and material. In front of this frame and upon the floor is arranged the cocoon pan B, containing the cocoons and warm water for dissolving the glutinous substance that connects the fibers of the silk, in the usual manner. Directly over this pan are arranged two horizontal metallic plates C C secured to a horizontal projecting board D fastened to the upper side of the frame. These plates are perforated with perforations or slits for the fibers of the silk to pass through. On the top of the frame and near the front thereof is arranged a horizontal transverse vibrating or traverse bar U containing the guide wires for spreading the silk evenly on the reels. This traverse bar moves to the right and left in rectangular openings in the frame by means of a pin or cog F Fig. 3 projecting down from the under side of said bar into a zig zag groove in the circumference of a revolving cylinder G Fig. 3 turned by bands and pulleys connected with the driving power. The guide wires, made in the usual manner are inserted into the upper side of this bar.

The reel  $H^1 H^2$  for winding the silk is arranged on the top of the frame about the center thereof on an axle turning in boxes in the heads of posts I J' mortised and tenoned into the frame on one side thereof, said axle with the reel being turned by pulleys K and band L connected with the driv-

ing power. The reel is made in two parts  $H^1 H^2$  or sections, one section being for each strand of silk, so that when the reel is filled the parts can be separated in removing them to other posts for unwinding on to spools or bobbins. Each section is composed of a hub from which radiate a number of arms to whose extremities are fastened short rails running parallel with the axle which rails are grooved on the outer face. In the operation of reeling the silk, these reels are made fast to the axle by wedges or other means so as to turn with it.

There are two posts J J' and boxes to receive the reels when the silk is to be unwound from them upon the spools so posts placed in a direct line with the first mentioned posts on the opposite side of the frame. In front of the last mentioned posts and on top of the frame are arranged parallel longitudinal bars M placed edgewise to receive the axles of the spools while receiving the silk from the reels. The axles on which the spools are placed have on them fixed pulleys N coming against the periphery of a revolving cylinder O for turning them by the friction of the surfaces coming together. Or the axles may have round collars turned on them which will answer the same purpose. The spools are wedged on the aforesaid axles. The cylinder for turning them by friction may be made in short sections and fixed on a horizontal axle turning in boxes on the frame by pulleys and band.

Between the before mentioned reel posts and the cylinder for turning the spools is arranged an inclined board P fastened to the top of the frame to which are secured two metallic plates Q called cleaners for cleaning the silk of any knots or flossy substances that may be carried up with it, which plates are notched in the upper edge next the rail with two V shaped notches in which the silk is drawn, which notches are filed on the upper side with a triangular file so as to make the lower edges of said notches sharp in order to take off the floss and knots effectually as the silk is drawn over them by the spools.

Against the rear end of the frame in an upright position is fastened the spindle



frame R Fig. 1 containing any convenient number of spindles S two thirds of which being designed to give the silk the first twist and the other third to twist it in a doubled state. These spindles are arranged in a vertical position and are turned by bands, pulleys, and drum, in the usual manner. The two thirds  $S^1$  revolve with the sun and the one third  $S^2$  against it at a reduced speed.

The bobbins T which receive the silk from these spindles as it is twisted by them are arranged on horizontal axles immediately over them and are turned by pulleys and bands connected with the driving power.

Between these bobbins and fliers is arranged a horizontal vibrating or traverse frame W containing a set of guide wires  $w$  for laying or spreading the silk evenly upon the bobbins moved to the right and left against the rear end of the main frame by means of a revolving cylinder V containing a spiral or zig zag groove around its circumference into which a pin or cog  $F^2$  passes projecting down from the lower rail of said vibrating frame which cylinder is turned by band and pulleys by the driving power.

On the top of the frame and in front of the bobbins over the spindles and fliers turning against the sun, are arranged two posts W containing four boxes to receive the axles of the horizontal bobbins containing the silk to be doubled having on each axle a ratchet wheel X for the purpose of stopping their revolving motion when a thread breaks by means of two bent wires Y, Fig. 4, one of which bent wires being designed for each bobbin and made to turn vertically on a horizontal pin inserted into the side of one of the posts W. This bent wire is bent at right angles at its short end so as to form an arm for catching against the teeth of the ratchet wheel. One of these wires is placed above the other. The end of the long arm of the upper wire is formed into an eye through which the silk from the lower bobbin is passed. This wire is designed to stop the motion of the upper bobbin. The silk from the lower bobbin is conveyed through the eye of the upper wire to a spool Z at the front end of the machine where it is doubled. The axle of the bobbin which is immediately below the bobbin containing the ratchet wheel just described also contains a ratchet wheel on or near the end opposite to that containing the ratchet first described. This ratchet wheel is also stopped by means of a bent wire constructed in the same manner as that described and moving on the opposite post. It is placed below the axle of the lower bobbin, and is called the lower bent wire. The silk from the upper bobbin is conducted from it through the eye of this lower bent wire to the same spool as before described where the two strands are brought together and

doubled. Should this last mentioned strand break the long arm would fall and raise the short arm and bring it in contact with the teeth of the lower ratchet wheel and stop the motion of the lower bobbin while the upper bobbin would of course stop from the breaking of its strand of silk. The principal object of this arrangement being to prevent the winding of the threads singly upon the spool when one is broken, or unevenly when one becomes slacker than the other. The spool containing the silk doubled in this manner, when filled, is taken and placed on the spindles  $S^2$  of the fliers which revolve against the sun and are there twisted. The bobbins which receive the silk thus doubled and twisted are placed above these fliers on the same range with those first described. The silk is then finished and ready for skeining, hanking and weaving.

The driving power and gear of this machine is a large wheel  $a$  or crank turned by any convenient power fixed on the end of a horizontal shaft  $b$  projecting beyond the left side of the machine. On this shaft are several pulleys  $p$  around which pass the bands for turning the reels, spools and bobbins. Parallel with this shaft are four horizontal shafts on which are pulleys P around which are passed bands for turning the several revolving parts of the machine before described. The drum  $g$  Fig. 2 for turning the spindles is arranged near the middle of the frame and is turned by a band passed around the main or driving wheel  $a$ .

Operation: Place the cocoons in the warm water in the cocoon pan B, convey the fibers of silk through the metallic plates C and guide wires X to the reel H being crossed in the manner of the Piedmontese reel. Put the machine in motion; this winds the silk upon the reel H. When the reel is filled separate the sections of it and place them between the other posts or standards J. Convey the silk through the cleaners Q and guide wires  $y$  to the spools  $Z^2$ . When the spools are filled put them on the spindles  $S^1$  of the fliers which revolve with the sun and convey the ends to the bobbins T over them. These spindles give the silk the first twist. Then place two of these bobbins when filled on the axles of the ratchet wheels X and convey the threads through the eyes of the bent wires Y to the center spool Z at the front of the machine, where they are doubled and wound upon said spool. When this spool is filled put it on one of the spindles  $S^2$  of the fliers which revolve against the sun and convey their ends to the bobbin T over it. Here the two doubled strands are twisted and wound upon the bobbin, which finishes all that this machine is designed to perform. The silk is then ready for the weaver.



What I claim as my invention and which I desire to secure by Letters Patent is—

1. Constructing the reel in two sections so that each section will wind a single strand  
5 and when filled that the sections can be separated and removed to another axle for the purpose of spooling, as described.
2. The combination of the ratchet wheels

X axles and bent wires Y for stopping the motion of the spools placed on said axles 10 when the silk breaks in doubling it as described.

THOMAS WHITE.

Witnesses:

WM. P. ELLIOT,  
EDW. MAHER.