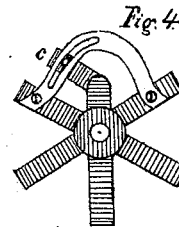
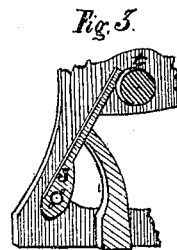
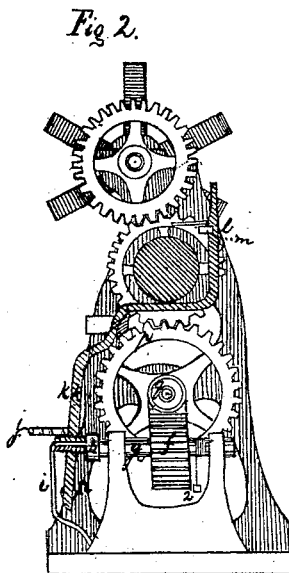
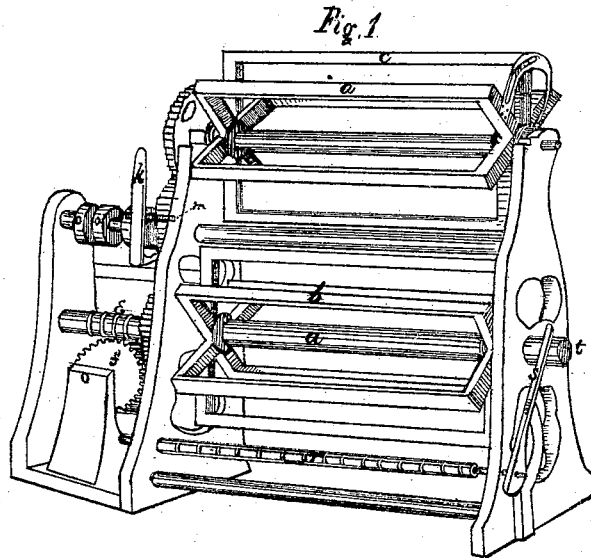


SAMUEL K. SMITH.

Improvement in Machines for Measuring, Stretching, and Skeining Silk.

No. 114,721.

Patented May 9, 1871.



Witnesses:

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SAMUEL K. SMITH, OF NEWARK, NEW JERSEY.

Letters Patent No. 114,721, dated May 9, 1871.

IMPROVEMENT IN MACHINES FOR MEASURING, STRETCHING, AND SKEINING SILK.

The Schedule referred to in these Letters Patent and making part of the same.

I, SAMUEL K. SMITH, of the city of Newark and State of New Jersey, have invented certain Improvements in Machines for Stretching Silk in the Gum, of which the following, when taken in connection with the accompanying drawing, is a specification.

The nature of my invention consists in certain improvements whereby the silk is stretched and skeined at the same time, by the same machine, by one motion, and by one person.

Figure 1 is a perspective view of a machine with my improvements attached.

Figure 2 is a view, showing the arrangement for driving the machine and for measuring the silk.

Figure 3 is a perspective view, showing the cam and lever operating the sliding bar *r*.

Figure 4 is an end view of the upper swift, showing the adjustable arms.

Heretofore the silk has been run off from the bobbins onto a roller of wood or metal, and from thence onto another roller of the same description, and from thence onto bobbins again, and from thence onto a reel to be skeined, which requires the labor of two persons and two separate machines.

By the use of my invention the process is greatly simplified, as it requires but one machine and one person to operate it, and about one-half the time to perform a given amount of labor.

To enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation.

In the first place I construct a frame, which should be made of metal. In this frame are placed two swifts, *a* and *b*, of any required size, one above the other, but their axes are not in a perpendicular plane, for if so the tension would all be upon one arm of the swifts; but the top swift *a* should be far enough to one side so that the tension will be upon two arms of the swifts.

The shaft of the top swift *a* has a hinged box or bearing, so that when the silk is skeined the top of the box may be removed, and the end of the swift raised, and the skeins removed by or from this end.

In order to loosen the skeins, so as to facilitate their removal, the bar *c* is made adjustable, so that it may be forced downward, thus loosening the skeins that they may be easily removed.

The lower swift *b* is that upon which the silk is first wound from off the bobbins, and upon it the silk is also measured; and for this purpose a device is arranged at one end of the machine in the following manner:

Near the end of the shaft *d* is formed a worm-gear, *e*, which meshes into a corresponding gear, *f*.

Upon the back end of the shaft *g*, which passes through the gear *f*, is a thread, upon which is placed a nut, *h*, which does not turn with the shaft *g*, but is held in position by a wire, *i*, or its equivalent, which prevents the nut from turning, and at the same time allows it to move backward and forward as far as required; and when the nut *h* presses against the gauge-pin *j*, which passes through the shipping-bar *k*, and forces the bar *k* out from the notch *l* in the arm *m*, it is drawn back by the spring *n* at the bottom of the bar *k*, and throws the belt, which drives the machine, off onto the loose pulley, and the machine stops.

The notches in the gauge-pin *j* are for the purpose of setting the pin so as to measure a given number of yards on the lower swift *b*. This is an important part of the machine, as it enables the operator to measure any required number of yards at the same time that the silk is taken from the bobbins.

After the silk has been measured on the lower swift *b* and the machine has been stopped, the end of the silk is fastened to the upper swift *a*, and a belt is adjusted upon the other pulleys *o*, and the motion of the swifts is reversed, and the silk is wound upon the upper swift *a*, by which process it is also stretched and skeined.

In order to stretch the silk the gear *p* upon the lower swift *b* should be proportionately larger than the two upper gears, the proportion to be in accordance with the amount of stretching required, which may be more or less.

Before starting the machine for the purpose of stretching and skeining the silk, the gear *f*, which is adjustable, should be moved backward upon the shaft until it is out of gear, when the weight *2*, which is secured by a cord to shaft *g*, will drop, and, turning the shaft *g*, adjust the nut *h* into its proper place; and after the operator has removed the silk from the upper swift he has but to readjust the gear *f* so as to mesh with the worm-gear *e*, when the machine is ready for the first process of winding the silk from off the bobbins.

Near the bottom of the machine in front is a sliding bar, *r*, creased at equal distances, which is for the purpose of securing uniformity in the winding of the silk, each thread passing through one of the creases in the sliding bar *r* above mentioned.

The sliding bar *r* is operated by means of an adjustable lever, *s*, at the right end of the machine, which lever is operated by means of a grooved cam on the end of the shaft *d*, a stud in the end of the lever *s* fitting and sliding in the grooved cam *t*.

The sliding bar *r* is secured in a slot or mortise on

the lower end of the lever *s*. The extent of the horizontal motion of the sliding bar is regulated by means of the lever *s*, which is adjustable.

Having thus fully described its construction and operation,

What I claim as new, and desire to secure by Letters Patent, is—

1. The swift *a*, carrying the adjustable arm *e*, in combination with the swift *b*, lever *s*, cam *t*, and the gear mechanism, substantially as herein shown and described.

2. In combination with the shipping bar *k*, the gauge-pin *j*, and the nut *h*, operating automatically, substantially as and for the purposes set forth.

3. The combination and arrangement of the several parts operating conjointly, substantially as and for the purpose set forth.

SAMUEL K. SMITH.

Witnesses:

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