

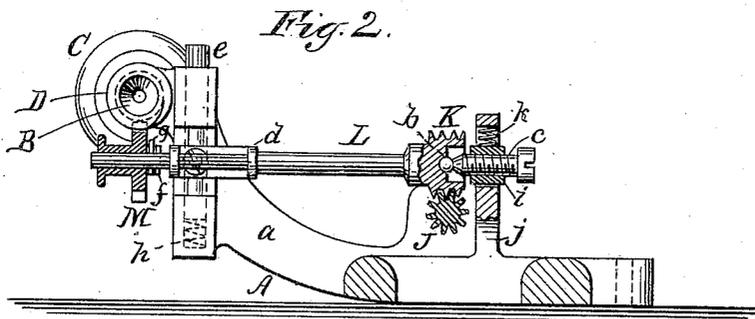
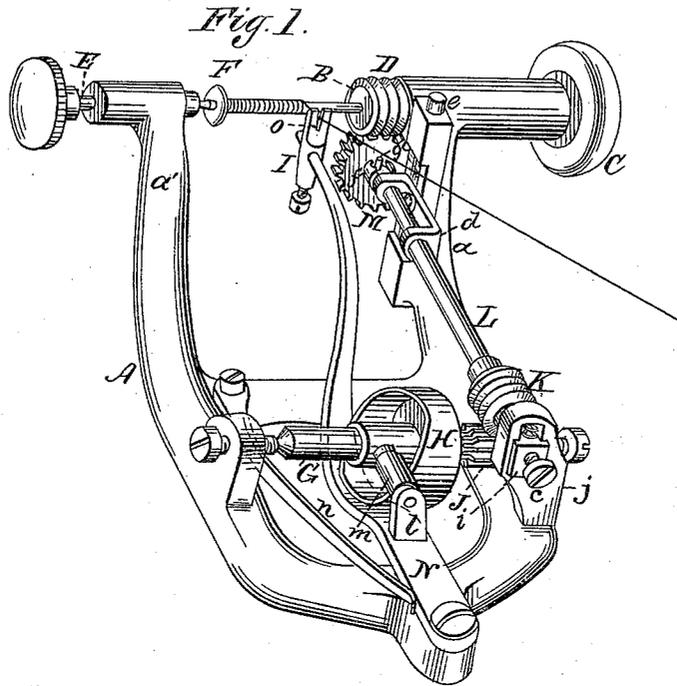
(No Model.)

2 Sheets—Sheet 1.

A. COATES.
BOBBIN WINDER.

No. 329,144.

Patented Oct. 27, 1885.



Witnesses:
H. P. Parker.
H. C. Hagen.

Inventor:
A. Coates
By Geo M. Hopkins,
Atty.

(No Model.)

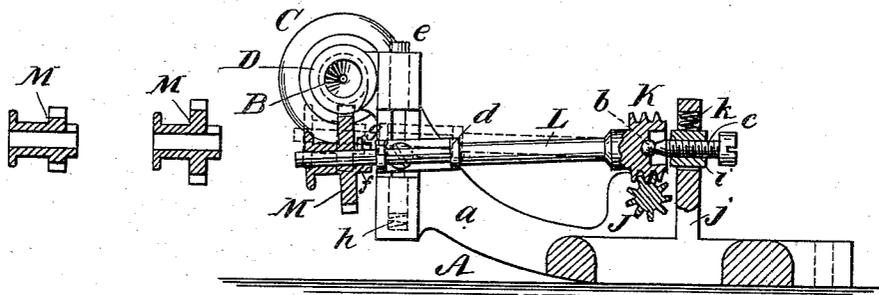
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Fig. 3.



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UNITED STATES PATENT OFFICE.

ABRAHAM COATES, OF WATERTOWN, NEW YORK.

BOBBIN-WINDER.

SPECIFICATION forming part of Letters Patent No. 329,144, dated October 27, 1885.

Application filed October 20, 1884. Serial No. 145,942. (No model.)

To all whom it may concern:

Be it known that I, ABRAHAM COATES, of Watertown, in the county of Jefferson, in the State of New York, have invented a new and useful Improvement in Bobbin-Winders, of which the following is a specification, reference being had to the annexed drawings, in which—

Figure 1 is a perspective view, and Fig. 2 a transverse section. Fig. 3 is a transverse section showing interchangeable worm-wheels.

The object of my invention is to provide a simple and efficient bobbin-winder capable of winding threads of all sizes evenly upon the bobbin.

It consists in the combination, with the spindle of the bobbin-winder, of worm-wheel gearing and a cam operated thereby, a lever moved by the said cam, and carrying a thread-guide, through which the thread passes to the bobbin.

In ordinary bobbin-winders the adjustment is fixed and unalterable for a given size of thread. In my improvement I have provided for winding different sizes of thread by interchangeable worm-wheels, and a spring adjustment for the worm-wheel shaft, by means of which worm-wheels of various sizes may be brought into engagement with the worm upon the bobbin-winder spindle.

In one of the arms, *a*, of a forked frame, *A*, adapted to be pivoted on the table of a sewing-machine or other machine in connection with which a bobbin is used, is journaled a spindle, *B*, carrying at the outer end a friction-wheel, *C*, by which it takes the motion, and at the inner end a worm, *D*. The other arm, *a'*, of the frame *A* is provided with the usual spring-acted bobbin-holder, *E*, between which and the concave end of the spindle *B* the bobbin *F* is held.

A shaft, *G*, is journaled between ears projecting upward from the frame *A*, and carries a cam, *H*, for actuating the thread-guide *I*, and is provided with a worm-wheel, *J*, engaged by a worm, *K*, on the shaft *L*. At a point immediately above the center of the shaft *G* the shaft *L* is provided with a hemispherical cavity, *b*, for receiving the spherical end of the screw *c*, upon which that end of the shaft revolves. The opposite end of

the shaft *L* is received in a bracket, *d*, which is pivoted to a sliding spring-acted bar, *e*, moving in bearings in the frame *A* at right angles to the spindle *B*. The shaft *L* is prolonged beyond the bracket *d* for receiving worm-wheels *M*, adapted to be engaged by the worm *D* on the spindle *B*. The worm-wheels *M* are made of various sizes, and are each provided with a notched sleeve, *f*, which engages a pin, *g*, projecting from the shaft *L*. The spring *h*, which is placed in the bottom of the guide in which the bar *e* slides, presses the said bar *e* upward, carrying with it the shaft *L*, which swings on the spherical end of the screw *c*, and presses the worm-wheel *M* into engagement with the worm *D* on the spindle *B*, and whatever the size of the worm-wheel *M* the spring *h* is sufficient to always keep it in engagement with the worm *D*. The screw *c* passes through a nut, *i*, which slides in bearings in a post, *j*, projecting upward from the frame *A*. A spring, *k*, placed above the nut *i* presses the said nut downward and insures the engagement of the worm *K* with the worm-wheel *J*. The worm *K* being pressed downward into engagement with the worm-wheel *J* in the manner described, and the worm-wheel *M* being pressed upward into engagement with the worm *D*, insures a positive communication of motion from the spindle *B* to the shaft *G*, so that no loss of motion or irregularity in the rotation of the shaft *G* can occur.

An arm, *N*, pivoted to the frame *A*, and extending under the shaft *G* toward the bobbin *F*, supports upon its upper side a stud, *l*, which carries a roller, *m*, bearing on the edge of the cam *H*. The roller *m* is kept in constant contact with the edge of the cam *H* by a spring, *n*, attached to the frame *A*, and bearing against the pivoted arm *N* near its center of motion, and pressing the arm *N* and roller *m* toward the cam *H*. The cam *H* is formed of a section of a hollow cylinder, and is adapted to impart to the arm *N* a uniform reciprocating motion, carrying the thread-guide *I*, which is secured to the free end of the said arm, back and forth before the bobbin *F*. The thread to be wound upon the bobbin *F* passes through a slit, *o*, in the thread-guide *I* before being delivered to the bobbin, so that when the

worm-wheel M, adapted to the thread to be wound upon the bobbin, is placed on the shaft L, the thread-guide will carry the thread along the length of the bobbin F, so that it will be wound in uniform spiral layers.

Worm-wheels M of various sizes, adapted to the different sizes of thread, will be supplied with the bobbin-winder, and may be marked, so that the user of the winder may know what worm-wheel to use for the given size of thread.

The advantage secured by my improvement is the uniform winding of the thread upon the bobbin in successive layers, enabling a greater amount of thread to be wound upon the bobbin and avoiding the kinks in thread due to irregular winding.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a bobbin-winder, the combination, with the thread-guide-actuating cam, of a bobbin-winder spindle, a worm on the bobbin-winder spindle, and means for securing the bobbin in operative position, an adjustable shaft intermediate between the bobbin-winder spindle and shaft of the thread-guide-actuating cam, and interchangeable worm-wheels adapted to be carried by the intermediate shaft and be engaged by the worm on the bobbin-winder spindle, substantially as and for the purpose specified.

2. The combination, in a bobbin-winder, of the spindle B, and means for securing the bobbin in operative position, the worm D, worm-wheel M, shaft L, worm K, worm-wheel J, shaft G, thread-guide I, and spring-acted lever N, substantially as herein specified.

3. In a bobbin-winder, the combination, with the spindle B, and means for securing

the bobbin in operative position, the thread-guide I, and intermediate parts, of the intermediate shaft, L, and spring-supported bearings at opposite ends thereof, adapted to press the worm K and worm-wheel M against the parts with which they engage, as herein specified.

4. In a bobbin-winder provided with the spindle B, and means for holding the bobbin in an operative position, the combination, with the shaft L, mounted in a pivoted bracket, and adapted to receive interchangeable worm-wheels of different sizes, of the spring *h*, for pressing the shaft L toward the spindle B, to bring the worm-wheel M into engagement with the worm-wheel D on the spindle, as specified.

5. In a bobbin-winder provided with a spindle, B, and bobbin-holder E, the combination, with the shaft L, mounted in a pivoted bracket provided with a hemispherical cavity, *b*, in the end thereof, of a spherical bearing fitted to the hemispherical step to allow of the rotation and swinging of the shaft L, as herein specified.

6. In a bobbin-winder provided with a spindle, B, and bobbin-holder E, the combination, with the shaft L, having a hemispherical step, *b*, in the end thereof, of the worm K, fixed to the said shaft centrally over the hemispherical cavity, and the screw *c*, having a spherical end adapted to the hemispherical cavity *b* in the shaft L, and located over the axis of the worm-wheel J, with which the worm K engages, substantially as specified.

ABRAHAM COATES.

Witnesses:

JNO. LANSING,
THOS. F. KEARNS.