

(No Model.)

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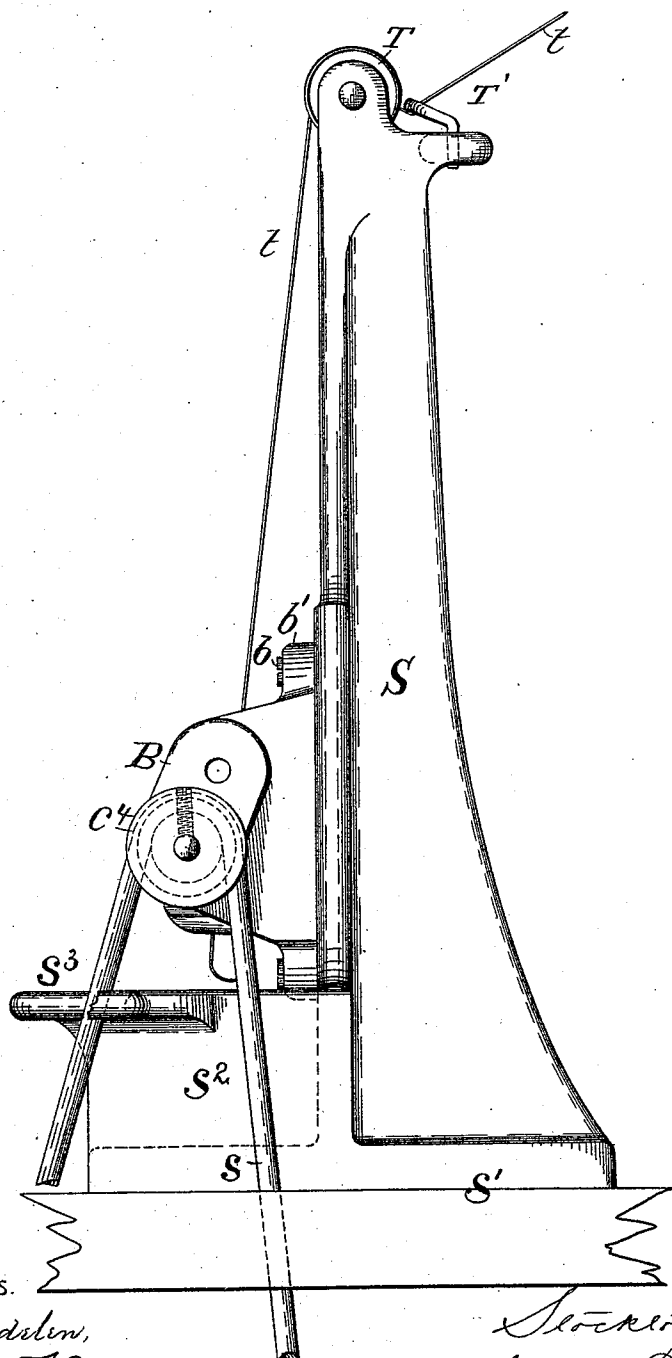
S. BORTON.

AUTOMATIC BOBBIN WINDER FOR SEWING MACHINES.

No. 575,587.

Patented Jan. 19, 1897.

Fig. I.



Witnesses.

H. Rees Edelen,

Theodore T. Snell

Inventor

Stockton Barton.

by Polio Mauro,
his attorney.

(No Model.)

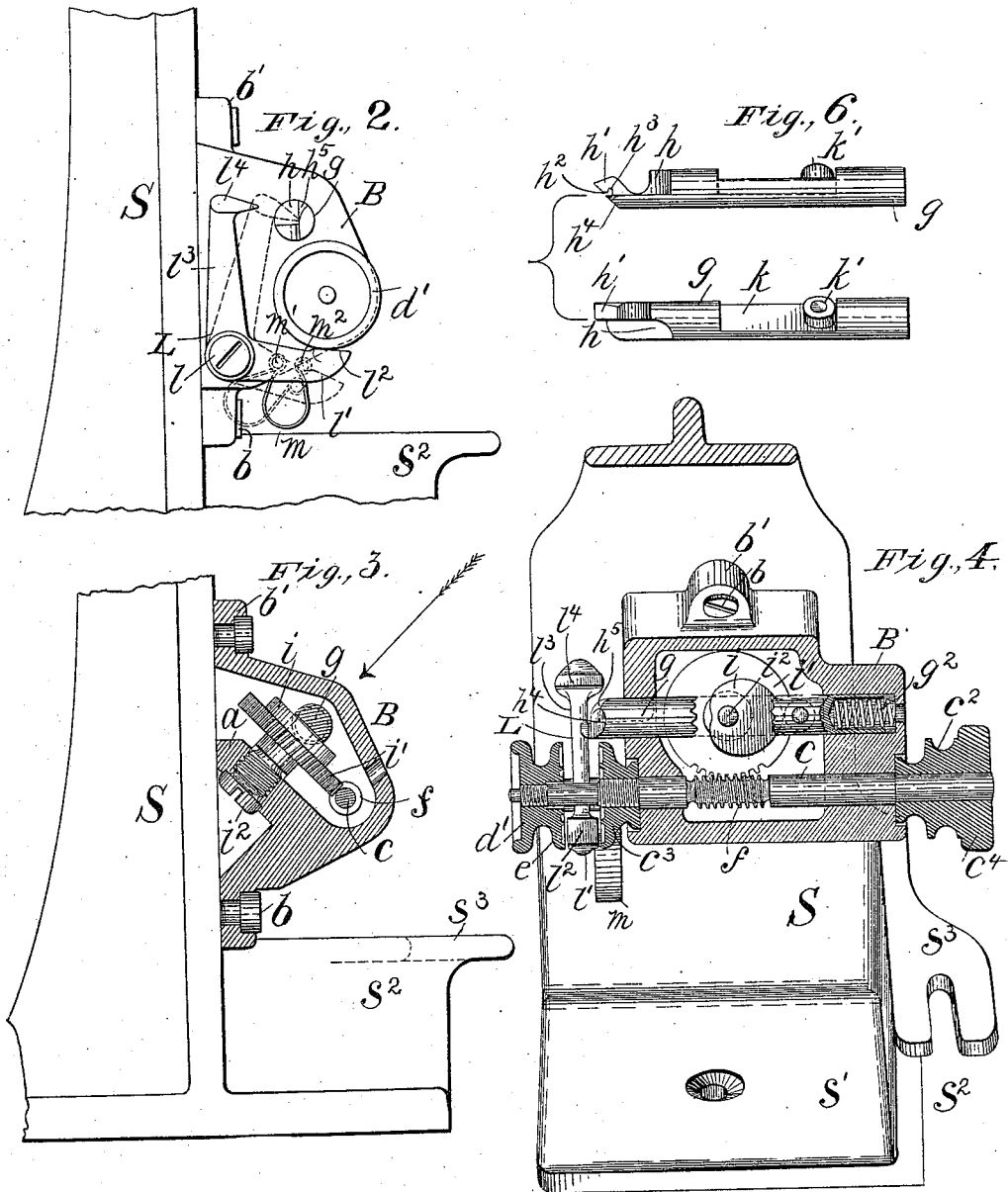
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Witnesses.
W. R. Edelen.
Theodore T. Snell

Inventor
Stockton Borton
by Edward Mauro,
his attorney.

(No Model.)

3 Sheets—Sheet 3.

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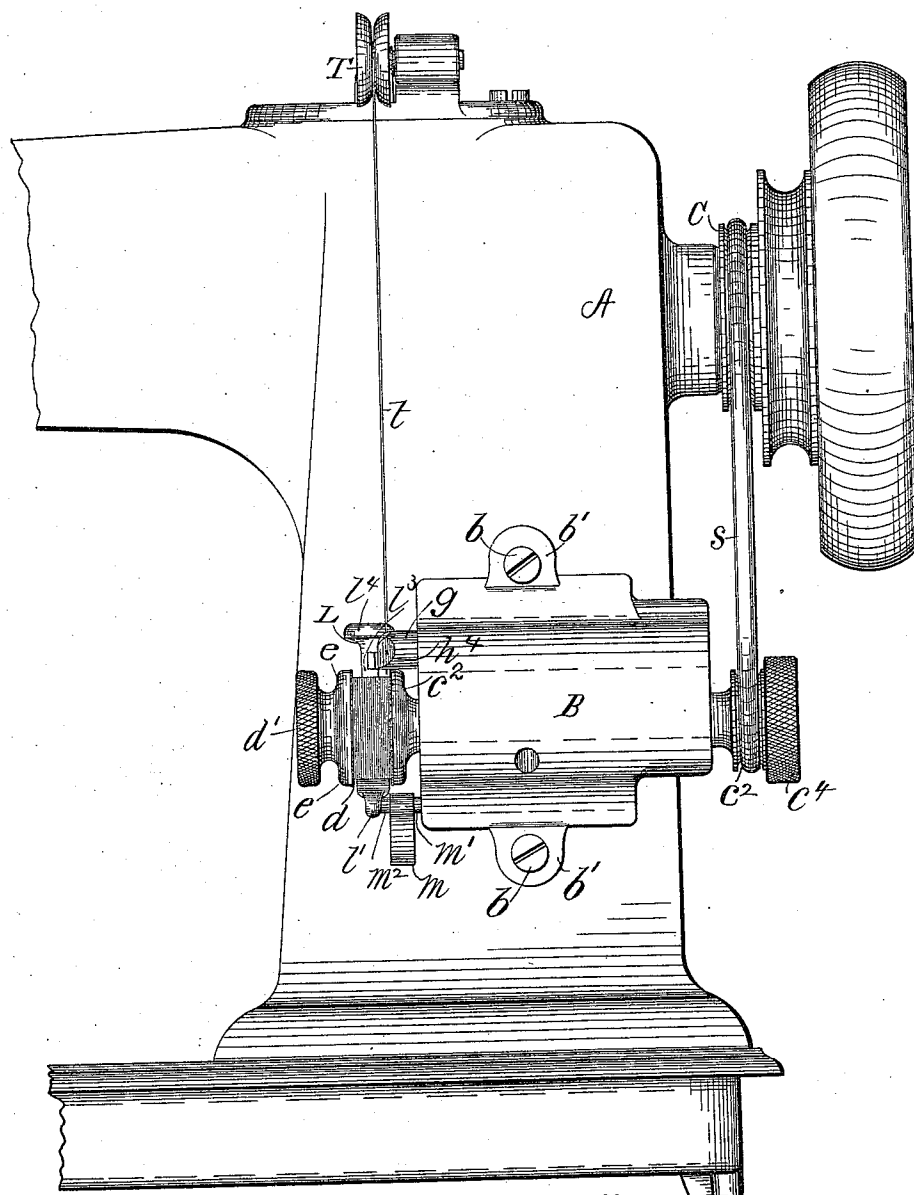


Fig. 5.

Witnesses.

W. R. Edlin.

Theodore T. Snell.

Inventor.

Stanton Borton.

by Tolson & Mauro,
his attorneys.

UNITED STATES PATENT OFFICE.

STOCKTON BORTON, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO THE
WILCOX & GIBBS SEWING MACHINE COMPANY, OF NEW YORK, N. Y.

AUTOMATIC BOBBIN-WINDER FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 575,587, dated January 19, 1897.

Application filed September 11, 1895. Serial No. 562,152. (No model.)

To all whom it may concern:

Be it known that I, STOCKTON BORTON, of Providence, Rhode Island, have invented a new and useful Improvement in Automatic Bobbin-Winders for Sewing-Machines, which is fully set forth in the following specification.

This invention relates to devices for winding thread upon the bobbins used in lock-stitch sewing-machines, such devices being commonly known as "bobbin-winders."

One of the principal objects of the invention is to provide an appliance which will perform the desired work without care or attention on the part of the operator, who, after setting it in operation, may leave it to continue the winding until the bobbin is full, when the thread will be automatically cut off. The winder hereinafter described has a self-threading guide, thereby further reducing the amount of attention required from the operator. The winder may be conveniently attached to the arm of a sewing-machine, but in factories it is more convenient to have the bobbins filled by a special operator and supplied to the sewing-machine operators.

To this end the invention embraces a special stand upon which the winder may be mounted, said stand being provided with a tension and guide for the driving-belt, adapted to be run from a sewing-machine motor.

The invention can most conveniently be explained in connection with the accompanying drawings, in which—

Figure 1 represents the bobbin-winder and stand in side elevation. Fig. 2 is an elevation of the winder and part of the stand from the side opposite Fig. 1. Fig. 3 is a vertical transverse section, partly in elevation. Fig. 4 is a section through the axes of the guide-rod and bobbin-spindle in perspective, looking obliquely in the direction of the arrow, Fig. 3. Fig. 5 is a front elevation of the winder mounted on the arm of a sewing-machine, and Fig. 6 illustrates the guide-rod detached.

The stand S is an upright casting provided with a base S'. A short vertical wall S², rising from the latter, carries a horizontal flange S³, which is slotted to form a guide for the driving-belt s. The casing B of the winder is attached to the face of the stand by screws b, passing through ears b'. At the top of the

stand is mounted the tension T, of any suitable construction, and the thread-guide T', through which the thread t is led, as indicated in Fig. 1.

In Fig. 5 the winder is shown mounted upon the upright standard A of a sewing-machine and driven from a pulley C on the main shaft thereof.

The winder has a shaft c, journaled in bearings in the casing B. It projects beyond said casing at both ends, carrying on one end a pulley c² and near the other a disk c³, fast on the shaft. A thumb-nut c⁴, having a milled periphery, is formed integral with the pulley c², whereby the shaft may be held stationary while turning the clamping-nut d'. The extremity of the shaft c beyond the disk c³, and over which the bobbin d slides until it comes in contact with said disk, is somewhat reduced in diameter and is partially screw-threaded for engagement of the thumb-nut d'. Between the latter and the bobbin is interposed the clamping-disk e, shown as made in one piece with nut d'. A worm f is cut on that part of shaft c lying within the casing B for a portion of its length, for purposes hereinafter referred to.

The mechanism for feeding the thread to the bobbin consists mainly of a sliding guide-rod g, lying parallel with the shaft c, and projecting through an opening in the casing B alongside of the bobbin. The other end of slide g is hollowed out and incloses a coiled spring g², whose pressure moves the slide g to the left, motion in the opposite direction being imparted by means hereinafter described. The other or projecting end of the rod is recessed or cut away at h. This recess has a vertical and a horizontal side, and looking at the end of the rod approximates a quadrant in shape. Beneath this recess is left a lug h', which is inclined in both directions from its point. The end of rod g is also inclined, forming with the face of lug h' a guide-surface h⁴ oblique to the axis of the rod. The upper part of the end of the rod is rounded, as shown at h⁵, Fig. 4. Surface h⁴ is intersected by a cut h³, constituting an inlet for the thread to the thread guide or eye h³ in lug h'. When the thread is connected to the bobbin and the latter begins to rotate, the

thread, on being tightened, slides along the inclined surface h^1 and is drawn into the thread-eye h^3 . As already stated, the guide rod or slide g is moved in one direction by spring g^2 . Movement in the opposite direction is imparted to it by a heart-shaped cam i , mounted on worm-wheel i' , carried on pin i^2 , journaled in an obliquely-inclined partition a of casing B, and rotated by engagement with the worm f on the shaft c . Slide g within the casing B is cut-away for a portion of its length, as at k , and against the flat face of the cut-away portion is located a friction-roller k' , with which the cam i makes contact.

In order that a bobbin may be placed in the winder and the thread wound thereon during the ordinary running of the machine, and without special attention from the operator to note when the bobbin is full, means are provided for automatically cutting the thread at the proper time. Such means consists of a bell-crank lever L, pivoted on the side of the casing B by a screw l , the lower arm l' of said lever being flattened at l^2 for making contact with the thread as it is wound on the bobbin, and the upper arm l^3 carrying a hammer or cutter l^4 . The arm l^3 during the winding presses upon the thread nearly the entire width of the bobbin, insuring compactness and the even laying of the threads. The bell-crank lever L is actuated by a U-shaped spring m , pivoted at one end m' to the frame B and at the other m^2 to arm l' , tending to press the lever in either direction according to its position. When the parts are in the position shown in Figs. 2 and 4, the pressure of spring m is exerted to keep cutter l^4 in its raised position; but when the lever has so far tilted that the point m^2 where the spring is connected to the lever passes a line drawn through the axis of the lever and point m' (which position it has nearly reached in Fig. 2) the direction of pressure of the spring on the lever is reversed, by a principle well understood, and the lever will be suddenly snapped to the position shown in dotted lines, Fig. 2. The edge of the cutter l^4 is broader than the bobbin, so that in any position of sliding guide g it will act upon the thread when tripped. In descending, the cutter severs the thread against the vertical face of recess h in the guide-rod. The edge of the hammer is quite dull, and it acts by crushing or breaking rather than by cutting the thread. Being dull, the edge does not cut into the anvil or thread-guide, and sharpening is never required, as in the case of sharp-edged cutters.

The bobbin-winder herein described operates as follows: The bobbin d having been secured in place by manipulating the thumb-nut d' , the thread is led thereto over the extremity of the slide g , which is self-threading; the thread sliding down or up the inclined end thereof to the slot h^2 , from which it slides into the opening h^3 . It is only necessary to put

the bobbin in place, connect the first end of the thread therewith, and start the machine. As soon as the bobbin begins to pull on the thread the latter is drawn automatically by the back-and-forth movement of slide g into the eye h^3 . As the bobbin is rotated the worm-thread f rotates the worm-wheel i' , from which motion in one direction is transmitted through the heart-shaped cam i and friction-roller k' to the slide g , said slide being moved in the opposite direction by the spring g^2 . By the action of slide g the thread is guided and evenly wound in layers upon the bobbin. It is apparent that the spring could be dispensed with and a positive movement in both directions be imparted to the slide, if desired. During the winding of the bobbin the arm l' of bell-crank lever L is pressed against the thread wound on bobbin d by the U-shaped spring m , the said lever being gradually tilted by the accumulation of thread on the bobbin until the bobbin is filled to the periphery of its side disks, at which instant the lever has been so far tilted that the shifting of the relative positions of the pivot-points of the spring causes a reversal of the pressure of the latter, causing the sudden descent of the cutter l^4 upon the thread, as it lies against the slide g , with sufficient force to sever the same just above the eye h^3 .

It is obvious that modifications could be made in the construction of the various parts herein described and illustrated in the accompanying drawings without departing from the spirit of the invention.

Having thus particularly 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 bobbin-shaft, of a guide-rod having its end beveled or cut across at an oblique angle to the axis of the rod and provided with a thread-eye near the beveled surface and with a cut or thread-inlet from said surface to said eye, and means for imparting a reciprocating movement from said shaft to said rod, substantially as described.

2. In a bobbin-winder, the combination with the bobbin-shaft, of a guide-rod recessed or cut away at its end, a lug on the rod beneath the recess, the end of the rod and lug being beveled or cut across at an oblique angle to the axis of the rod, and the lug being provided with a thread-eye and a cut or thread-inlet from the beveled surface to said eye, and means for imparting a reciprocating movement from said shaft to said rod, substantially as described.

3. In a bobbin-winder, the combination with the bobbin-spindle, of a thread-guide, a thread-severing device, a spring for actuating the same connected at one end to said device and at the other to a stationary part, and means actuated by the full bobbin to reverse the position of the spring and cause the descent of the thread-severing device upon the thread, substantially as described.

4. In a bobbin-winder, the combination of the bobbin-spindle means for holding a bobbin thereon, a guide-rod, a two-arm lever, a spring normally pressing one arm of said lever against the thread as it is wound on the bobbin, and a hammer carried by the other arm of the lever, said spring being connected at its respective ends to the lever and to a stationary part, so that as the lever is tilted by the accumulation of thread on the bobbin, the pressure of the spring is at a predetermined point reversed, causing the descent of the hammer to sever the thread against the guide-rod, substantially as described.

5. In a bobbin-winder, the combination of the bobbin-spindle the guide-rod, means for reciprocating the same, the automatic cutter and means actuated by the accumulation of

thread on the bobbin for causing the descent of said cutter, to sever the thread against the side of the guide-rod, substantially as described.

6. In a bobbin-winder, the combination with the bobbin-spindle, of the thread-guide, the thread-severing device in the form of a hammer, and means actuated by the full bobbin for causing the descent of the hammer upon the thread-guide to sever the thread, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

STOCKTON BORTON.

Witnesses:

J. PARMLY,
E. A. RACE.