# A. C. CAREY.

## BOBBIN-WINDERS FOR SEWING-MACHINES.

No. 186,709. Patented Jan. 30, 1877.

Fig. 1.

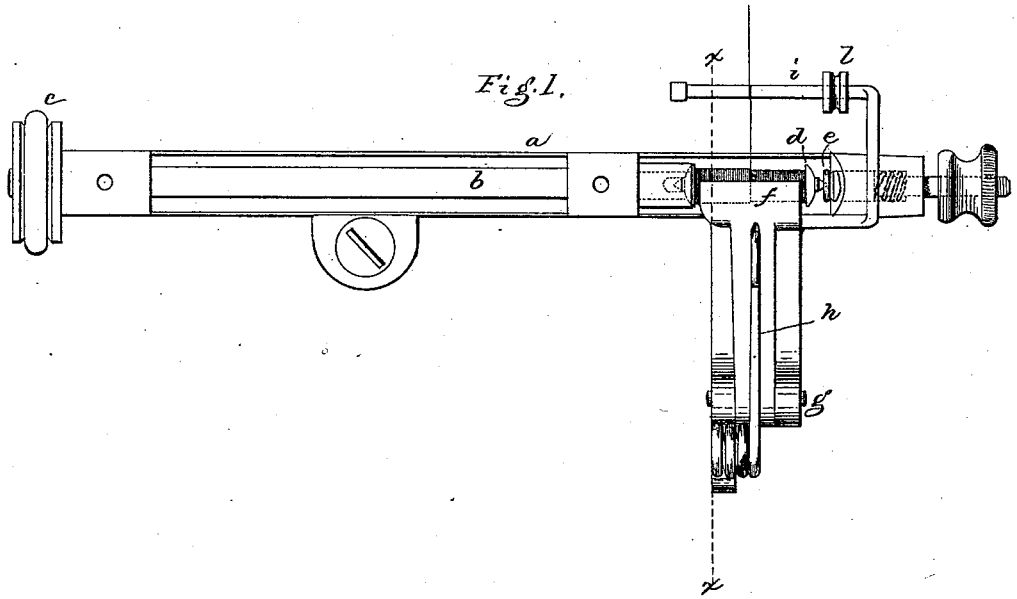


Fig. 2.

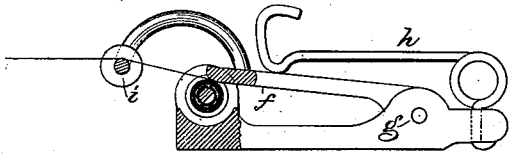


Fig. 3.

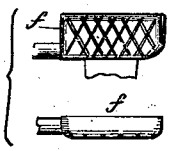


Fig. 4.


Witnesses.
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# UNITED STATES PATENT OFFICE.

AUGUSTUS C. CAREY, OF MALDEN, MASSACHUSETTS.

## IMPROVEMENT IN BOBBIN-WINDERS FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. **186,709**, dated January 30, 1877; application filed January 10, 1877.

*To all whom it may concern:*

Be it known that I, AUGUSTUS C. CAREY, of Malden, in the county of Middlesex and State of Massachusetts, have invented an Improved Thread-Winding Mechanism, of which the following is a specification:

This invention relates to improvements in thread-winding mechanism, and is in this instance shown as embodied in a device for winding sewing-machine bobbins. The invention has special reference to the combination, with a rotating spindle, of a pressure-pad, grooved or corrugated, as hereinafter described, to prevent a coil of thread being wound from overriding a coil just wound and adjacent thereto; also, in the combination, with a rotating spindle and pressure-pad, of a thread-controlling guide-wire connected with the pressure-pad, and moving with it away from the axis of the bobbin or spool being wound.

Figure 1 represents one form of the invention as embodied in one well-known bobbin-winding attachment in use in connection with sewing-machines. Fig. 2 is a section thereof on the line *x x*, Fig. 1; and Fig. 3 an under-side and an edge view of the pressure-pad. Fig. 4 shows the pad without corrugations.

Machine-wound thread, as found on commercial spools, is laid uniformly and evenly in layers from end to end of the spool, and such thread, when used in machine-sewing, unwinds uniformly. Thread, as commonly wound from commercial spools upon small bobbins for use in sewing-machine shuttles, is guided by hand and wound very unevenly, the coils override each other, the layers of thread do not extend evenly from end to end of the bobbin, the surface of the thread is left irregular, and, being wound irregularly, less thread is wound upon the bobbin than would be the case if evenly wound. Thread so imperfectly wound cannot be delivered from the shuttle at a uniform tension, as is necessary for the best sewing and stitch.

To obviate this bad hand-winding, and consequent imperfections in sewing, numerous devices have been contrived to be applied to sewing-machines. To obviate this evil of unequal draft from imperfectly-wound bobbins, it has been attempted to wind small shuttle-bobbins of wood in regular thread-winding machines, such wound bobbins being used in the shuttle instead of the usual metallic bobbins, filled, as needed, by the usual bobbin-winder of the sewing-machine.

I have ascertained, by experiment, that the thread being wound should meet the bobbin or the surface of thread thereon immediately at or just in advance of the point in the direction of and in line with the axis of the bobbin, at which the front of the pressure-pad meets the layers of thread already wound.

The thread-controlling guide-wire, from which the thread extends as a tangent to the bobbin, should also vary its position with relation to the axis of the bobbin as it, wound with thread, increases in size, as thereby the thread is always delivered upon the bobbin-surface at a uniform position with relation to the pressing portion of the pad.

In the drawing, the body *a* of the bobbin-winding device represented is that employed on the Wilson shuttle machine. The spindle *b* is rotated through the action of a balance or fly wheel on the rubber-covered roller *c*. One end of the bobbin *d* enters a cavity at the end of spindle *b*, and the journal at the other end enters a proper spring-pressed centering device, *e*, the bobbin being thereby held so as to be rotated in unison with the shaft *b*. The pressure-pad *f*, pivoted at *g*, is pressed down upon the bobbin by a spring, *h*; and connected with the pad is a thread-controlling guide-wire, *i*, about which the thread is passed over or wound one or more times, as shown in Fig. 1, preparatory to its passage to the bobbin. The hole at the rear end of the pad, to receive the pin *g*, is so enlarged with reference to the diameter of the pin that the pad, besides rising with the thread as it is wound on the bobbin, can also move a little longitudinally in the direction in which coils are to travel, as the thread on reaching the end of the bobbin shifts its direction of movement, and also so that the pad can rock to adapt itself to the new and old layers on which it rests part of the time. The front of the pad is rounded, as are its ends, and the under surface is scored, notched, or corrugated diagonally and in reverse directions, as in Fig. 3.

These notches extend in opposite directions to operate on the thread as it travels from right to left, or vice versa.

When, for any reason, the thread of the coil being wound attempts to override an adjacent coil already wound, the portion of the coil so raised or elevated above the surface of the adjacent layers will be caught in one of the grooves and thrown off into its proper position. The thread being wound and extending to the bobbin touches the bobbin or cylindrical surface of wound thread just in advance of the rounded front portion of the pad, and, consequently, when the thread is being properly and evenly wound the single tangential strand cannot enter either of the diagonal grooves, but if the strand overrides an adjacent wound coil, then it, raised from its proper position, enters a groove at the front of the pad, and is immeditely thrown down to its proper position. When the thread completes a cylindrical layer from head to head of the bobbin, the strand extending from the guide-wire strikes the bobbin-head and is immediately reversed, and as the loop of thread changes the direction of its movement along the guide-wire the presser-pad also moves a little in the same direction. This pad, under the action of the moving strand of thread, is pressed constantly in the direction of movement of the coils, which also tends to prevent overriding of the coils.

The rounded ends of the pad permit the thread to override at the ends of the bobbin so as to commence a new layer in a reverse direction, and to facilitate the passage of the thread under the pad. The spring *h* presses upon the center of the pad, and the pad, pivoted as before described, is therefore permitted to rock so as to adapt itself to the surface of the bobbin composed of the new layer being wound and an old layer already wound, their surfaces being on different levels. By this device it is possible and practicable to rapidly and quickly wind sewing-machine bobbins as smoothly as the ordinary machine-wound spools of commerce. The thread outside the guide-wire *i*, extending, it may be, from a spool from which the bobbin is being wound, need not be directed or moved by hand along the guide-wire. The thread held at a point within the plane of the heads, or substantially central with relation to the bobbins' length, may pass directly from a spool of commerce to or about the guide-wire, and the strand being laid acting against the adjacent wound layer will cause the loop of thread about the guide-wire to travel from end to end of such wire, and the movement of the thread along the wire will be automatically reversed, as above described.

If desired, the thread may extend around the pulley *l*, arranged to turn freely about and slide longitudinally upon the guide-wire. The shape of the bobbin-winding frame may be changed without departing from this invention, and may be of the usual shapes applied to any of the well-known sewing-machines.

I claim—

1. The combination, with a rotating shaft, of a pressure-pad grooved or corrugated diagonally upon its under surface to press upon the surface of the thread of the bobbin, being wound to operate as and for the purpose set forth.

2. A pressure-pad, in combination with the thread-controlling guide-wire attached to it, and adapted to rise and fall with the pad, substantially as described.

3. The combination, with the grooved pressure-pad of the thread-controlling guide-wire, substantially as described.

4. A rotating shaft, in combination with a pressure-pad pivoted as described, rounded at its front and ends, and adapted to move at its forward end in the direction of the length of the bobbin, and to rock to adapt itself to the new and old layers of thread on the bobbin-surface, substantially as set forth.

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

AUGUSTUS C. CAREY.

Witnesses:
W. M. PARKER,
A. K. T. ROUNSEVILLE.