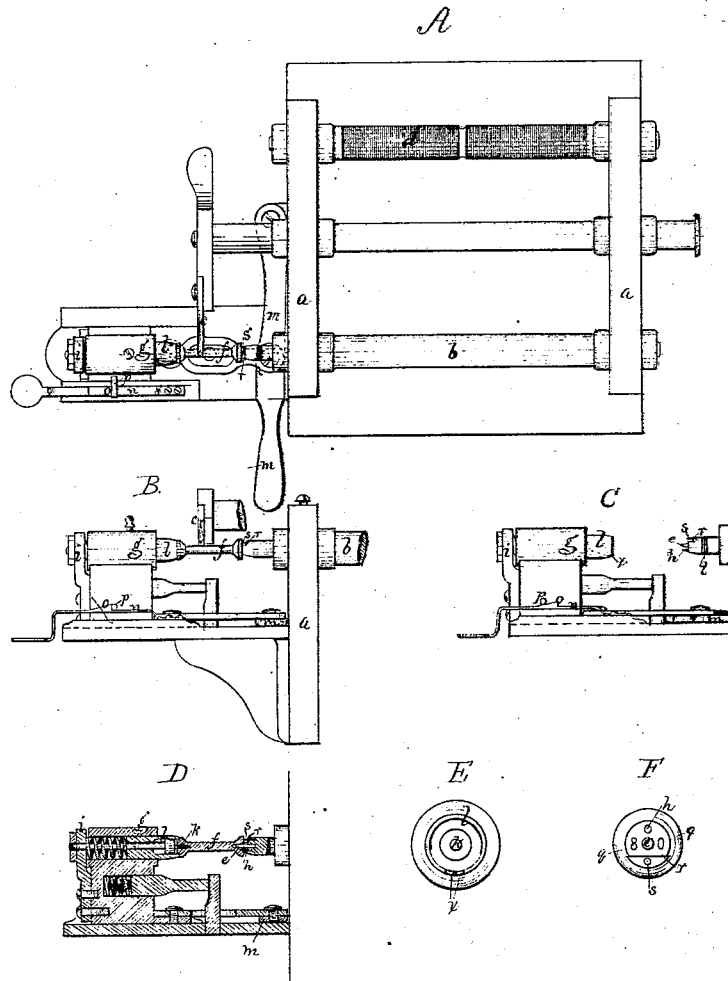


*D. M. Church,*

*Thread Winder.*

*No. 108,758.*

*Patented Nov. 1, 1870.*



*Dwight M. Church,*  
*By his Atty's*  
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Witnesses { *J. B. Kidder.*  
*W. W. Frothingham.*

# UNITED STATES PATENT OFFICE.

DWIGHT MADISON CHURCH, OF HOLYOKE, MASSACHUSETTS.

## IMPROVEMENT IN THREAD-WINDING MACHINES.

Specification forming part of Letters Patent No. **108,758**, dated November 1, 1870.

*To all whom it may concern:*

Be it known that I, DWIGHT MADISON CHURCH, of Holyoke, in the county of Hampden and State of Massachusetts, have invented an Improved Thread-Winding Machine; and I do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

United States Letters Patent Nos. 78,957 and 105,778 have been granted upon my invention of improvements in sewing-machine shuttle-bobbins, such improvements relating particularly to the construction of a wooden bobbin with a solid barrel, the heads of said bobbin being made with provision to receive journal or trunnion caps, by which the bobbin is mounted in the shuttle-bearings.

My present invention relates to an organization of mechanism for winding these solid cap-receiving bobbins, with reference to provision for holding the bobbin firmly between the rotary arbor or spindle and the tail-stock, to rotate it and wind the thread, a peculiar method of grasping the bobbin being required from the fact that there is no hole bored through the bobbin for reception of a spindle upon the end of the rotary arbor.

My invention consists, primarily, in combining, with a thread-winding mechanism and its traversing guide, a bobbin-driving shaft or arbor, having a spur or other suitable device for entering or grasping one head of the spool and insuring rotation thereof with the arbor, and a tail-stock, having provision for holding and centering the opposite head of the bobbin.

The invention also consists in various specific details of construction appertaining particularly to such combination.

The drawing represents a machine embodying the invention.

A shows the machine in plan. B and C show the tail-stock and the end of the spool-rotating arbor in elevation. D shows the same in central vertical section. E is an end view of the tail-stock; F, an end view of the rotary bobbin-driving spindle or shaft.

*a* denotes the frame; *b*, the driving-shaft that rotates the bobbin to be filled with thread; *c*,

the traversing guide that "lays" the thread, this guide being operated or reciprocated from end to end of the bobbin by a right-and-left-handed screw-shaft, *d*, and a suitable connection of the sliding guide-shaft thereto, as in other thread-winding machines. On the end of the driving-shaft *b* is a center point or pivot, *e*, that enters a socket formed in the center of one head of the bobbin in the lathe in which the bobbin is turned. The bobbin *f* is solid or has no axial bore, and when brought to the machine to be thread-wound it has the socket in but one head, the other head being sawed off square in severing the bobbin from the end of the stick from which it is formed in the lathe. To hold it in the machine with its axis coincident with the axes of the shaft *b* and tail-stock *g*, and insure its rotation, I construct and arrange the end of the bobbin-arbor and the tail-stock as follows: On the end of the arbor is the pivot-pin *e*, which enters the socket in one end of the bobbin. On one side of this pin a spur, *h*, projects from the end of the arbor. In the center of the head *i* is a pivot-pin, *k*, (stationary with respect to the tail-stock,) and sliding in the tail-stock is a guide, *l*, the front end of which, formed as a ring, embraces the boss upon one end of the bobbin, the guide being forced forward by a suitable spring, and the tail-stock being drawn forward by a lever, *m*, and forced back by a spring, *n*.

The bobbin to be wound is secured in the machine by first placing its socketed end against the pivot-pin *e*, then (holding the bobbin in axial line with the stock) throwing forward the tail-stock, which forces the pin *k* into the opposite end of the bobbin, and presses the first end against the spur *h*, and causes such spur to penetrate the bobbin-head, the tail-stock being locked in position by a spring-catch, *o*, springing up behind a pin, *p*, projecting from the tail-stock.

In thus securing the bobbin the boss upon its outer end is embraced by the flange or tubular end of the guide *l*, which in normal position lies just beyond the end of the pivot-pin *k*, and causes the pin *k* to correctly enter the center of the bobbin-head and form the shuttle-journal socket therein, the guide re-

treating, or, rather, remaining stationary, while the pin advances with the tail-stock and penetrates the head.

The spur *h*, entering one head and on one side of the pivot thereof, prevents the bobbin from turning on the pivot, or insures its rotation therewith, while the opposite pin, *k*, having been made to correctly enter the center of the opposite head by the boss-embracing guide, the bobbin is securely fixed ready to be rotated for reception of the thread.

When the bobbin is wound the spring-catch *o* is depressed, allowing the tail-stock to be thrown back by its spring and releasing the filled bobbin.

As the boss embraced by the guide flange or ring *l* is apt to be left somewhat rough by the lathe, the guide-ring is or may be provided with a cutting or reducing tooth, *x*, which trims down and smooths the perimeter of the boss as the bobbin rotates.

In the end of the driving-arbor a type or types, *q*, are inserted, the outer projecting ends of such types having upon them the numbers or other characters indicating the size, name, or quality of the thread, so that the same pressure which clamps the bobbin in the machine stamps such number or characters upon one end thereof.

To fasten the end of the thread to be wound, the arbor *b* may be slightly cut away, so as to form a shoulder, *r*, from which projects a pin, *s*, between which and the arbor the end of the thread is passed and secured; or the arbor may be provided with one or more deep slits, *t*, into which the end of the thread may be drawn, being pinched in the slit, so that as the bobbin turns the thread will wind.

It will thus be seen that, although the spool has no central bore, and cannot therefore be mounted upon a spindle to be wound, as in other thread-winders, provision is made to insure as accurate winding and disposition of the thread upon it as if it were so bored and mounted, my invention thereby enabling me to wind my patented bobbins with the same facility and accuracy obtained by common thread-winding machines in winding common spools or bobbins.

It will also be observed that I can at one operation socket the plain head of the bobbin, stamp the number of the thread upon the opposite head, and accurately wind the thread, and also, if necessary, trim the boss to be socketed.

Instead of the pivot-pin *e*, the end of the shaft *b* may be provided with a flange or ring to center the head of the bobbin, and with a suitable device to prevent rotation of the bobbin, and for the opposite pivot-pin, *k*, may be substituted a flange or ring directly on the end of the tail-stock, (in which latter case the sliding ring or guide *l* will be unnecessary;) but I prefer the arrangement shown.

I claim—

1. The pivot-pin *e* and spur, or equivalent device or devices, on the end of the driving-shaft, and the pivot-pin *k* and sliding guide-ring *l*, or equivalent device or devices, on the end of the tail-stock, for clamping between them the opposite ends of the bobbin, in combination with a thread-winding mechanism, and designed to clamp therein a solid bobbin to be wound, substantially as described.
2. A driving-shaft of a thread-winding machine constructed with the type or bobbin-marking letters or figures on its end, substantially as described.
3. The revolving shaft *b*, provided with the thread-end-retaining slit or groove *t* or pin *s* on its front end, substantially as set forth.
4. The movable tail-stock formed with a device, substantially as described, for clamping a shuttle-bobbin between it and the pivot-pin on the end of the driving-shaft.
5. In combination with the sliding tail-stock, the lever *m*, for forcing it upon the bobbin, and the spring-catch *o* and pin *p*, for locking it in position, substantially as shown and described.
6. The tubular guide *l*, provided with the cutting-tooth *x*, substantially as described.

DWIGHT MADISON CHURCH.

Witnesses:

J. P. BUCKLAND,  
C. W. RIDER.