

Machines for Pointing the Journals of Bobbins.

Patented May 13, 1873.

[illegible]

Inventor:
Dwight Madison Church
by John J. Halsted
his Atty.

UNITED STATES PATENT OFFICE.

DWIGHT M. CHURCH, OF HOLYOKE, MASSACHUSETTS, ASSIGNOR TO
TIMOTHY MERRICK, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR POINTING THE JOURNALS OF BOBBINS.

Specification forming part of Letters Patent No. **138,789**, dated May 13, 1873; application filed
May 17, 1872.

To all whom it may concern:

Be it known that I, DWIGHT M. CHURCH, of Holyoke, in the State of Massachusetts, have invented an Improvement in Machines for "Pointing" the Journals of Bobbins; 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.

My invention has been devised to meet the need of having perfectly true and central bearings or pivots for the small wooden bobbins for sewing-machine shuttles, lately successfully introduced by me to the sewing-machine trade; and it forms one of a series of machines invented by me, all contributing toward the perfection of such bobbins, or to the perfect and true automatic winding of the same.

In order to make these bobbins cheap enough to warrant their being thrown away after their thread has been used from them, so that the time and labor of the sewing-machine operator need not be wasted in refilling them, they must be made of cheap material, usually of soft wood like pine, &c., and which may be easily worked, and which requires delicately made and truly operating mechanism to point or journal the ends of the bobbins without destroying or injuring the blank; and these points or journals must be in true axial line, otherwise the bobbin in unwinding will, if at all eccentric in the shuttle, have a crank movement and strike the wall of the shuttle with its flanges, or jump at every revolution; or, if its ends or journals be in different lines it will wobble, and in either case it will hold less thread and refuse to deliver its thread evenly and uniformly. All bobbins for a particular class of machines, or for a given grade or size of the same class, should also be perfect facsimiles of each other, as far as practicable, as to their length from tip to tip of the journal, and as to the size of the journal, so that when purchased by the companies by the hundred gross, or other large quantity, none or rarely any shall fail to be adapted for the shuttle for which it may have been designed.

My present invention has for its object the pointing or journaling of these bobbins; it being premised that the bobbin, as to its heads and barrel, has been previously made in other machines, its journals only being left in blank or unfinished, to be brought to their final shape and finish in my present machine now to be described.

In the drawing, Figure 1 is a plan view of the machine; Fig. 2, a cross-section in the irregular line *xx*, the bobbins in the trough showing their journals in their unfinished or unpointed state; Fig. 3, an end view of the cutter-head with the centering-thimble in place therein; Fig. 4, a longitudinal section of the same; Fig. 5, a plan of one of the cutter-heads and its knife and rabbets, the thimble being removed; Fig. 6, a side view, showing the cutter-head shank in the shaft; and Fig. 7, bobbins, showing the two forms of journals in use.

A is the frame of the machine; B, the cam-shaft; C C', the cutter-head shafts; D D', the pulleys for driving them by means of belts, not shown, for connecting them with any driving-shaft. The cutter-head shafts are arranged to have a short longitudinal movement in the line of their axes, the same being imparted intermittently by cams F F', through the medium of levers G G' and springs *g g'*, an adjustment of the cams on the shaft or of the fulcrum-posts of the levers permitting an adjustment of the extent of this longitudinal movement, and adapting the action of the cutters for spools of different lengths. The cam-shaft may be driven from any proper source of power, and in any well-known manner. H is the feed or bobbin-carrying wheel, which receives the bobbins one by one, conveys them one by one to the cutter-heads, presents them in their proper position to be acted upon, and holds them there until the cutters have properly pointed or finished the journals all ready for their reception in the shuttle. Like kindred wheels, in some other classes of machinery, it is made with equidistant notches around its periphery. In my wheel these notches are adapted to receive the barrels of the bobbins, the heads of the bobbins not entering the notch or groove. The wheel is also made with

a peripheral groove to receive at its upper part a strap to hold the bobbins, as hereinafter stated. The notches are somewhat broader at their mouth than at their base, the better to facilitate the dropping therein of the barrel. Adjustable guides 4 4 serve to receive a column or tier of bobbins, which are supplied thereto by the attendant, (usually a child at small wages,) the under one of the series, each after the other, successively passing from these inclined guides into the next succeeding notch of the wheel. These guides are both equally adjustable, by slots and set-screws, as seen, to accommodate bobbins of different lengths. Other adjustable guides, 5 5, somewhat in advance of the first and on opposite sides of a portion of the wheel, serve to bring the ends of the bobbin as it approaches the cutters into true relation to the space between the cutter-heads before the latter approach each other to point or finish the journal. A metallic strap, 6, extends over part of the wheel, as seen, it being adapted to the groove in the periphery, and under this strap the barrel of each bobbin passes on its way to the cutters. This strap is supported at one end by a sleeve upon a pin, 7, projecting from the side of one of the adjustable guides, 5, and at its other end by an arm, 8, projecting from the under side of the table; and its function is to assist in holding the bobbins to place in the wheel until operated upon and discharged, a lever, 10, operated by a cam, 11, on the cam-shaft against the force of a spring, 12, serving at its forward end positively to press this band firmly down upon each bobbin in succession at the period when the cutters are operating upon it.

It will be understood that the intermittent actions of the feed-cutters and lever are timed coincidentally for proper joint action.

The peculiar construction of the cutter-heads, which are the vital part of my invention, and to which my other improvements herein described are subordinate, I shall describe hereinafter in detail.

In order to give uniform intermittent rotary motion to the feed-wheel, I employ a spur or projection, 13, on an adjustable sleeve, 14, on the cam-shaft, which at every revolution pulls backward, against the force of a spring, 15, a slide-rod, 16, whose forward end has a pulling-pawl which is hung loosely and drops by its own gravity, and which engages with the teeth of the ratchet-wheel 18 on the feed-wheel shaft 17, thus turning such wheel a determinate distance only at each revolution of the cam-shaft, such feeding action being timed relatively to the action of the cutters and the pressing action of the lever.

In order to accommodate the machine for pointing or finishing the journals of bobbins of different sizes and diameters, so that they shall always be presented to the cutters with their axes in the same line with the axes of the cutter-heads, the shaft of the feed-wheel

is hung in a sleeve or bearings, 18', upon a vertically-adjustable slide or plate, 19, the adjustment being effected by a thumb-screw, 19', as seen, while an adjustable stop-pin or screw, 20, controllable from above the table, limits at will the point to which the feed-wheel may be raised. A friction-wheel, 21, and strap 22, on the feed-wheel shaft, assist in giving steadiness of motion and prevent back-lash. Instead of this wheel and strap, a lever may be used, worked by a cam on the shaft, and having on its forward end a pin which shall intermittently enter one of a series of holes in the carrying-wheel, so as to positively lock it for each operation of pointing a bobbin, the same or a spring-cam serving to unlock it.

The stocks of the cutter-heads 23 enter sockets in their respective shafts, being secured thereto in any well-known manner so as to be revolved thereby. The heads are both alike, and each is made with a small central cavity to receive as it is cut the central tip or journal of the bobbin. I have shown in Fig. 4 such cavity adapted for a conical journaled bobbin; but when a cylindrical or nearly cylindrical tip is given to the journal this cavity is made conformable thereto, it being understood that there are but two kinds of journals made for shuttle-bobbins, namely, the conically-pointed and those which are styled cylindrical, these two forms of journals adapting them for use in all the varieties of shuttles used in sewing-machines.

Each head is also provided with a concentric cavity, 24, to receive a removable thimble, 25, with an open lateral cut, 26, to permit the free discharge of the chips, and a small outlet, 27, from its central cavity 29 to permit the free discharge of dust and prevent any clogging of the same therewith. This conical cavity must coincide with the conical tip which the journal is to receive, otherwise the knife would not perform properly its duty. The knife, which is removable by means of a set-screw or otherwise, serving to hold it to place, is shown at 29* in Figs. 5 and 6. The thimble 25 is made with a flange, 25*, a concentric cavity, 28, adapted to receive snugly and centrally the head of the bobbin, and a central hole of smaller diameter adapted to receive centrally and truly the journal to be pointed or finished, and to permit the same as the cutter acts upon it to pass inwardly until finished, the cavity and the hole always acting to keep the axis of the bobbin in true line with the axes of both cutter-heads. This thimble is in fact a double guide in insuring this perfect axial line, its larger opening guiding the head of the bobbin, and the smaller one its journal, and both guiding in accord and in aid each of the other, while the central cavity in the cutter-head is a third guide acting in aid of both. In this way absolute certainty is attained of making perfectly-true journals.

Instead of the thimble, above described, a face-plate having a cavity to admit and guide

the journal to be pointed or finished may be used; but I prefer the thimble, as thereby I attain more perfect results.

To change a cutter, I remove the screws 30 30, which hold the thimble to its place.

It is evident that, if desired, bobbins of other material than wood—such as ivory, hard rubber, *papier-maché*, &c., or even soft metals—may be pointed by my apparatus; but for the purposes of cheapness and facility of working and making them with great rapidity, in order to produce for the whole sewing-machine market a bobbin wound already for use, and which, though afterward thrown away when emptied, will be found cheaper in money and in saving of time and trouble than any mode of supplying a shuttle-thread heretofore known, I prefer to make them of wood, as heretofore stated.

In actual practice, it is found that with a small child to supply the machine with the unfinished bobbins, at a cost of, say, fifty cents a day for wages, sixty per minute can be pointed, or two hundred gross per day of eight hours, being one-fourth of a cent per gross.

I claim—

1. In a machine for pointing or finishing the journals of sewing-machine shuttle-bobbins, the cutter-heads provided with the removable circular thimble or face-plate 25, adapted to be inserted in the cutter-heads, and to receive the heads or journals of the bobbins, as shown and described.

2. The thimble 25 constructed with a flange, 25*, or its equivalent, serving to lodge it concentrically in the cutter-head, a concentric cavity, 28, serving to receive and guide the head of the bobbin, and a smaller central and concentric opening, 29, serving to receive and guide the journal to be finished.

3. The combination, with the two continuously-revolving but intermittently-sliding

shafts carrying cutters for journaling or pointing both ends of small bobbins, of an intermittently-rotating bobbin-feeding wheel, adapted to receive and carry the bobbins fed in at its periphery, substantially as shown and described.

4. The combination, with mechanism for simultaneously pointing or journaling both ends of the bobbin, of an intermittently-rotating feed-wheel provided with adjustable bearings, the combination being substantially as and for the purpose described.

5. The combination of two cutter-heads, each mounted on a separate and adjustable shaft in the same axial line, with the separately-adjustable side guides 5 5 for guiding and positioning both ends of the bobbin in its passage to the cutters.

6. The combination, with the described feed-wheel having the peripheral notches to receive the bobbin-barrels and the peripheral flanged groove, of the strap for holding the bobbins to place upon the wheel, as set forth.

7. In combination with the feed-wheel and holding-strap, the intermittently-acting lever for pressing positively upon each bobbin successively while its journal is being pointed or journaled.

8. The combination of the adjustable and inclined feed-guides 4 4 with the intermittently-acting feed-wheel and its holding-strap, substantially as shown and described.

9. The combination of a bobbin-feeding guide, 4, a bobbin-feeding wheel, H, and mechanism, substantially as described, for finishing or pointing the journals of sewing-machine bobbins ready for use in the shuttle.

DWIGHT MADISON CHURCH.

Witnesses:

TIMOTHY MERRICK,
O. W. RIDER.