

(No Model.)

3 Sheets—Sheet 1.

J. McCREARY.

MACHINE FOR WINDING BOBBINS.

No. 386,644.

Patented July 24, 1888.

FIG. 1.

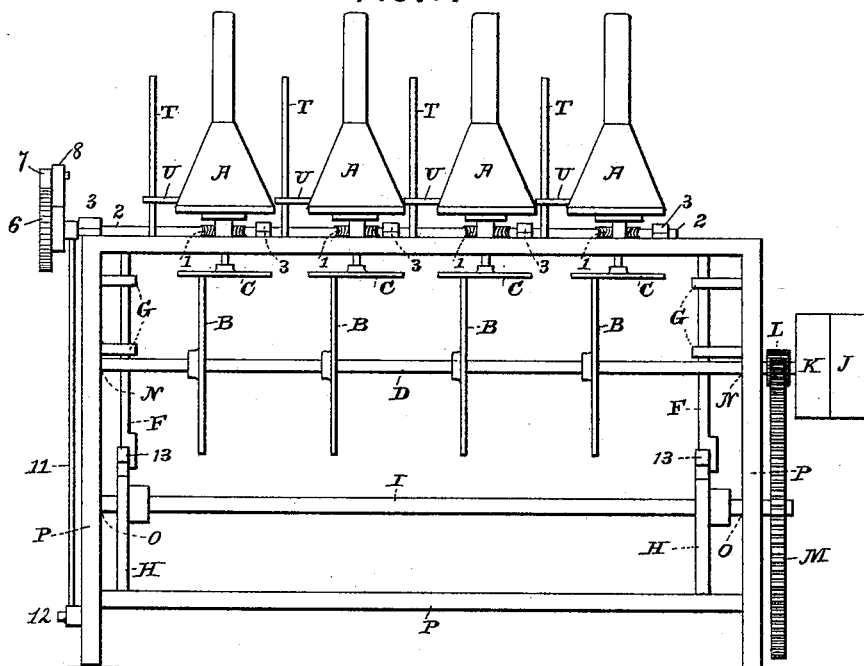


FIG. 2.

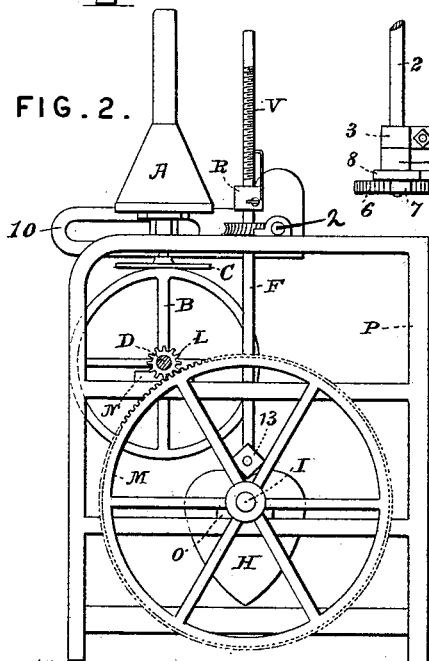


FIG. 4.

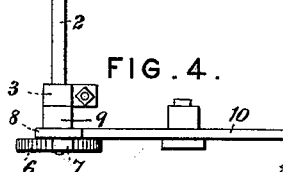
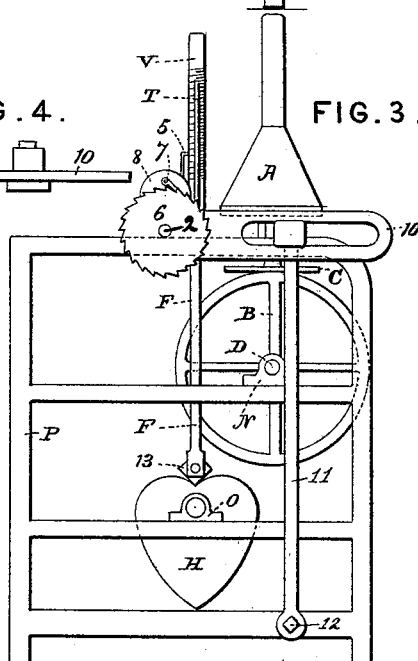


FIG. 3.



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(No Model.)

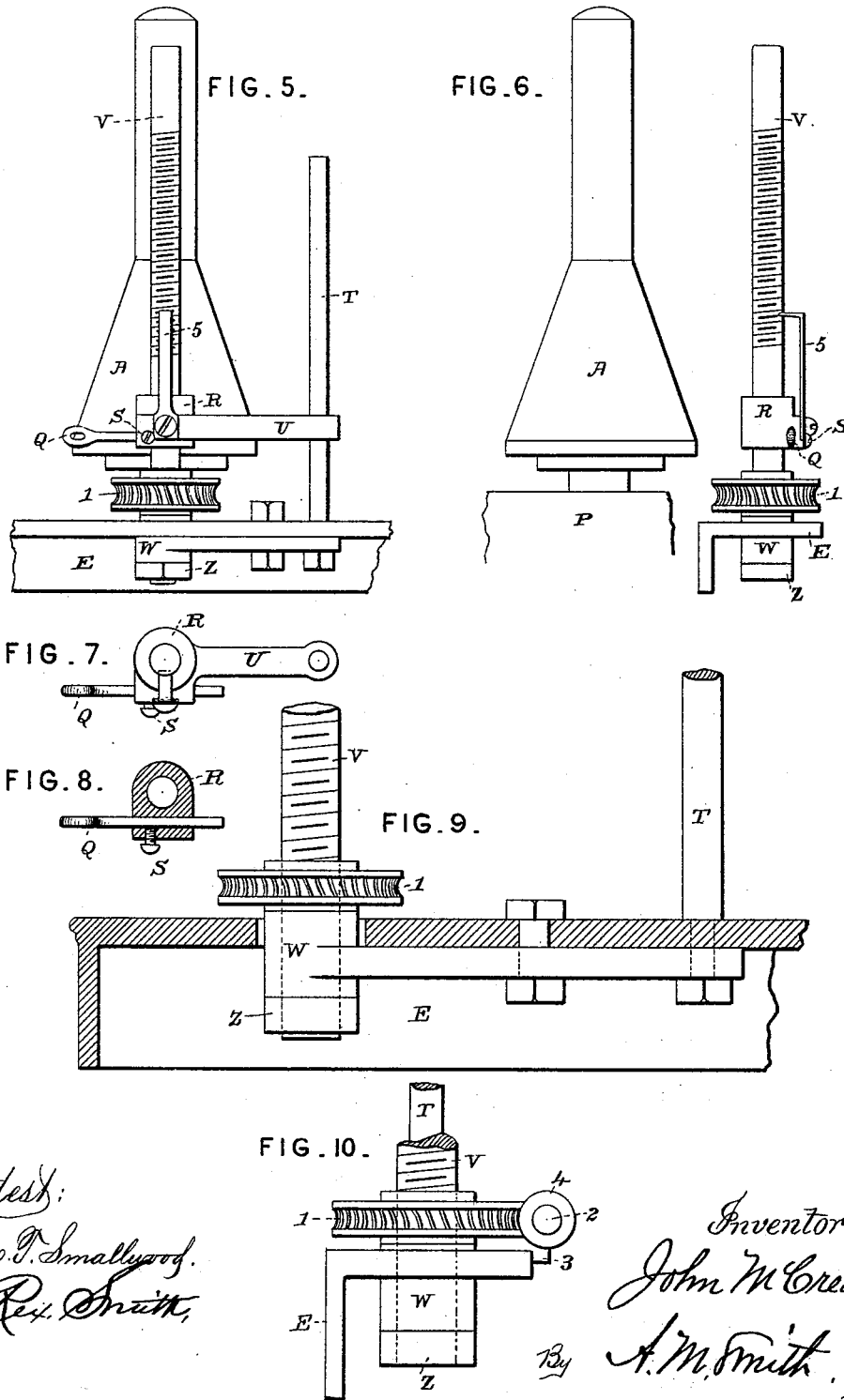
3 Sheets—Sheet 2.

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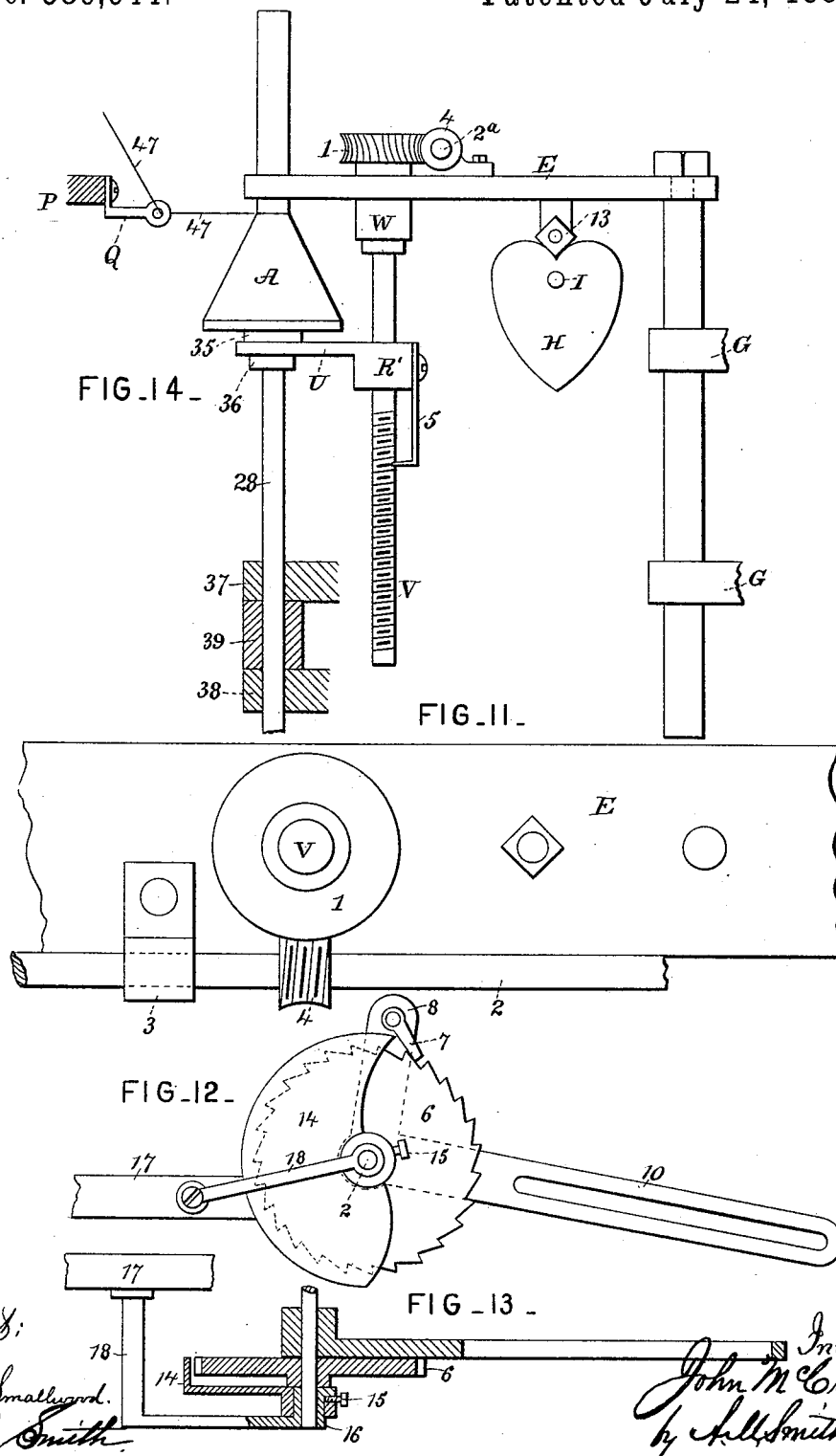
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UNITED STATES PATENT OFFICE.

JOHN McCREARY, OF COHOES, NEW YORK.

MACHINE FOR WINDING BOBBINS.

SPECIFICATION forming part of Letters Patent No. 386,644, dated July 24, 1888.

Application filed November 1, 1886. Serial No. 217,720. (No model.)

To all whom it may concern:

Be it known that I, JOHN McCREARY, of Cohoes, county of Albany, and State of New York, have invented a new and useful Improvement in Machines for Winding Bobbins, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to machines for winding thread or yarn from the "cops" or "jack-bobbins" onto the large bobbins employed in knitting-machines, and more particularly to the devices used in guiding the thread or yarn from the smaller to the larger bobbins and for laying or building the thread or yarn on the larger bobbins.

To the above purpose my invention consists in certain peculiar and novel features of construction and arrangement, as hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a front elevation of a yarn or thread winding machine with certain of my improvements applied thereto. Fig. 2 is an end elevation looking at the right-hand side of Fig. 1. Fig. 3 is a similar view looking at the left-hand side of Fig. 1. Fig. 4 is a detached plan view of the worm-shaft and the pawl-and-ratchet device for actuating the same. Figs. 5 and 6 illustrate, respectively, a rear and a side elevation of the bobbin and screw-rod for elevating the thread-guide. Figs. 7 and 8 are detached views, respectively, in plan and horizontal section, showing the manner of connecting the thread-guide to the carrier. Fig. 9 is a view, partly in rear elevation and partly in section, showing the manner of connecting the carrier-screw and steady-rod to the guide-bar. Fig. 10 is a detached view in side elevation showing the relative position of the carrier-screw and worm-shaft upon the guide-bar. Fig. 11 is a plan view of the structure shown in Fig. 9. Fig. 12 is a side elevation of the modified form of pawl-and-ratchet gear for operating the worm-shaft. Fig. 13 is a plan view (partly in section) of the same. Fig. 14 illustrates, also in side elevation, a still further modified type of winding-machine with my improvements applied thereto.

I will describe the machine represented in

Fig. 1, to which the first part of my invention is applied.

A are the bobbins driven by pairs of friction-wheels, of which B are the drivers, and C the driven wheels. The driven-wheels C are affixed to the spindles carrying the bobbins, and the drivers B are fixed to a common driving-shaft, D.

E is the hanger, which in this case is a bar extending longitudinally across the machine and carrying all of the revolving screws.

F are the hanger guide-rods, working in guides G and rigidly attached to hanger E.

H are suitable cams rigidly attached to the shaft I, which impart a reciprocating motion to the hangers equal in extent to the length of the conical part of the bobbin.

J is a loose pulley and K is a fast pulley to which the driving-belt is applied.

L and M are a pair of spur-wheels by which the relative velocity of the axles D and I is maintained.

N N are bearings of shaft D, and O O are bearings of shaft I.

P is the frame or stationary part of the machine.

Q is the thread-guide, in this case consisting of a small straight wire with a loop in one end. The wire passes through a hole in the adjustable carrier R, and is fastened or loosened by means of the set-screw S.

T is the steady-rod.

U is the carrier-arm, which has a suitable opening at one end to receive the steady-rod T, by which the carrier is prevented from turning with the revolving screw V, the rod T being parallel to screw V and both screw and rod being mounted on the hanger E. The revolving screw V has its bearing in the socket W, being retained in that socket by the collar Z and the worm-wheel 1.

2 is the worm-screw shaft, revolving in suitable bearings, 3, attached to the hanger E.

4 are the screws attached to shaft 2 and driving the worm-wheels 1. The carrier R is rendered adjustable at any height on the screw V by means of the spring-catch 5. To move the carrier along the screw V, the operator takes hold of the spring-catch near its point, and, springing the point of it out from the groove of the screw, moves the carrier either way

along the screw to any desired position. The revolutions of the screw V are always in the same direction, and when the point of the spring-catch 5 is in the groove the carrier R is always moved in the direction in which the bobbin is to fill with thread.

The screw V is represented in the drawings as a right-handed screw, and as such must revolve to the left in order to raise the carrier when the machine is in operation. When the spring catch reaches the end of the screw, its point will ride on the end of the screw and the carrier remain stationary until the carrier is again moved downward by hand.

6 is the ratchet-wheel attached to or near the extremity of the worm-screw shaft 2, and is actuated by the pawl 7 on arm 8 of the pawl-crank.

9 is the hub of the pawl-crank, carried by the shaft 2. Arm 10 of the pawl-crank is slotted to receive the wrist-pin of the rod 11. Rod 11 vibrates freely on the pin 12, projecting from the frame.

13 is the friction-block pivoted to the lower extremity of the hanger guide-rods F, through which the vertical reciprocating motion derived from cams H is imparted to the hanger E. When the machine, Fig. 1, is in operation, the velocity of the screw V may be regulated to the thickness or diameter of the yarn by adjusting the throw of the pawl—that is, by moving the wrist-pin socket of rod 11 in the slot of arm 10 nearer to or farther from the axle 2. A greater scope for adjustment may be obtained when necessary by changing the pitch of screws and number of teeth on the ratchet and by adding the shield 14. (Represented in Figs. 12 and 13.) The shield 14 may be turned to any desired position, and may be secured in such position by the set-screw 15, which passes through its hub, and fixes it on the stationary hub 16, (see Figs. 12 and 13,) in which the extremity of shaft 2 revolves. Hub 16 is attached to a projection, 17, by a suitable rigid angle-arm, 18. Projection 17 proceeds from and moves with hanger E.

The second part of my invention (clearly illustrated in Fig. 14) consists of a novel arrangement of the details already described, with slight modifications, whereby a machine is produced in which the thread-guide Q is stationary, and all the endlong motion required is imparted to the bobbin.

47 represents the thread or yarn passing through the thread-guide Q. The thread-guide may be located in or project from any part of the frame P, or be secured in any other convenient manner in position at a convenient distance from the bobbin, and in a plane at right angles to the axis of the bobbin where the cone joins the stem when the hanger E is nearest axle I—that is to say, in the relative positions shown in Fig. 14. The means for imparting the required motion to the worm-screw shaft 2 having been fully described, and shown in the other drawings are

not reproduced in Fig. 14. In this figure the cam H moves the hanger E and the screw V simultaneously.

35 and 36 are collars or flanges on the spindle 28, between which the carrier-arm is confined. The spindle 28 has fixed bearings 37 and 38, in which it revolves and through which it slides. It is caused to revolve by a spline or pin (not shown) in the pulley 39, which enters and remains in a suitable groove in the spindle, the pulley 39 being driven by a belt. The thread on the screw V extends only as far beyond the point of the spring-catch 5 as it is required to move the bobbin, so that when the point of the spring reaches the end of the thread it will be thrown out, and thereby be rendered inoperative until the carrier is moved forward again.

I do not confine myself to the particular form of the adjustable carrier described and shown, for it is evident that it may be greatly modified while retaining the essential features, which are that it be moved by the screw V, that it be readily engaged and disengaged from the threads of the screw, and that it be provided with suitable arms, projections, or attachments for carrying the thread-guide or for moving the spindle and bobbin.

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

1. The combination, with the machine-frame, of a hanger mounted thereon and adapted to move vertically relatively thereto, feed-screws on said hanger, and a longitudinal rod or shaft mounted upon and moving with said hanger, worms on said shaft adapted to engage worm-wheels on said feed-screws for imparting rotary motion thereto, thread carriers and guides for securing the proper delivery of the thread to the bobbins, the ratchet-wheel secured to said longitudinal worm-shaft, and the slotted angular pawl-lever for imparting rotary motion to said worm-shaft, substantially as and for the purpose described.

2. The combination, with the machine-frame, of the hanger mounted thereon and adapted to move vertically relatively thereto, the vertical guide-rods and the cam mounted on the driving-shaft for actuating said hanger, the longitudinal shaft on said hanger, the slotted and pivoted crank-arm and pawl and ratchet, whereby said shaft is arranged to be actuated by the upward movement of the hanger, the feed-screws, and mechanism interposed between said shaft and feed-screws for driving the latter, and the thread guides and carriers arranged to be acted upon by said feed-screws, all substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand this 29th day of October, A. D. 1886.

JOHN MCCREARY.

Witnesses:

DAVID R. SMITH,
LUCIUS K. SMALLING.