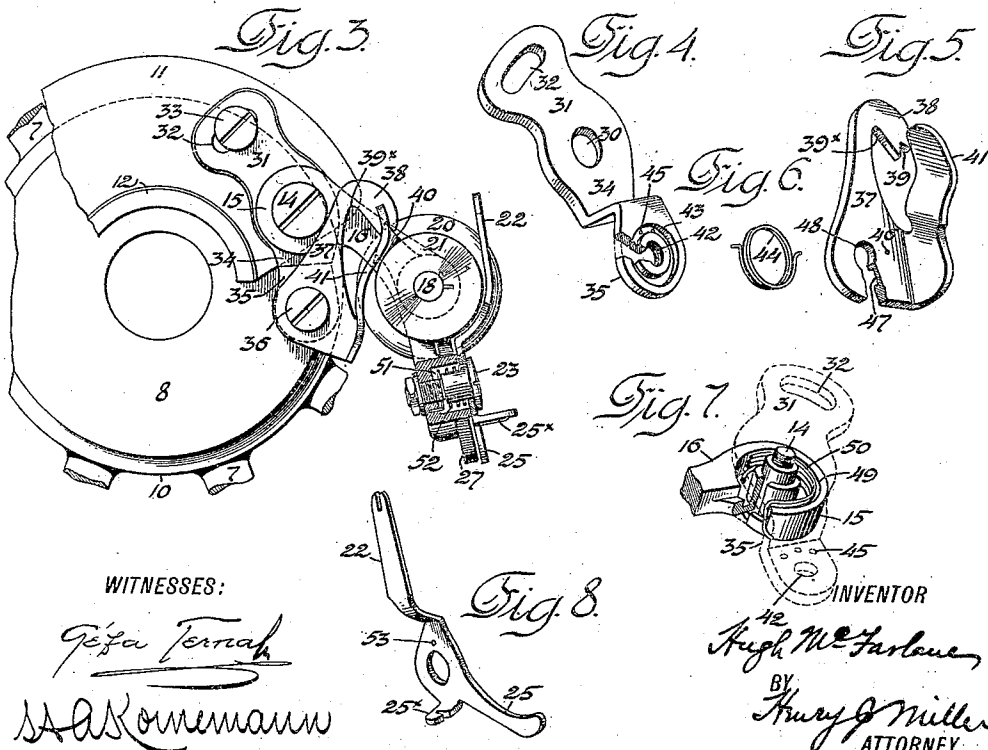
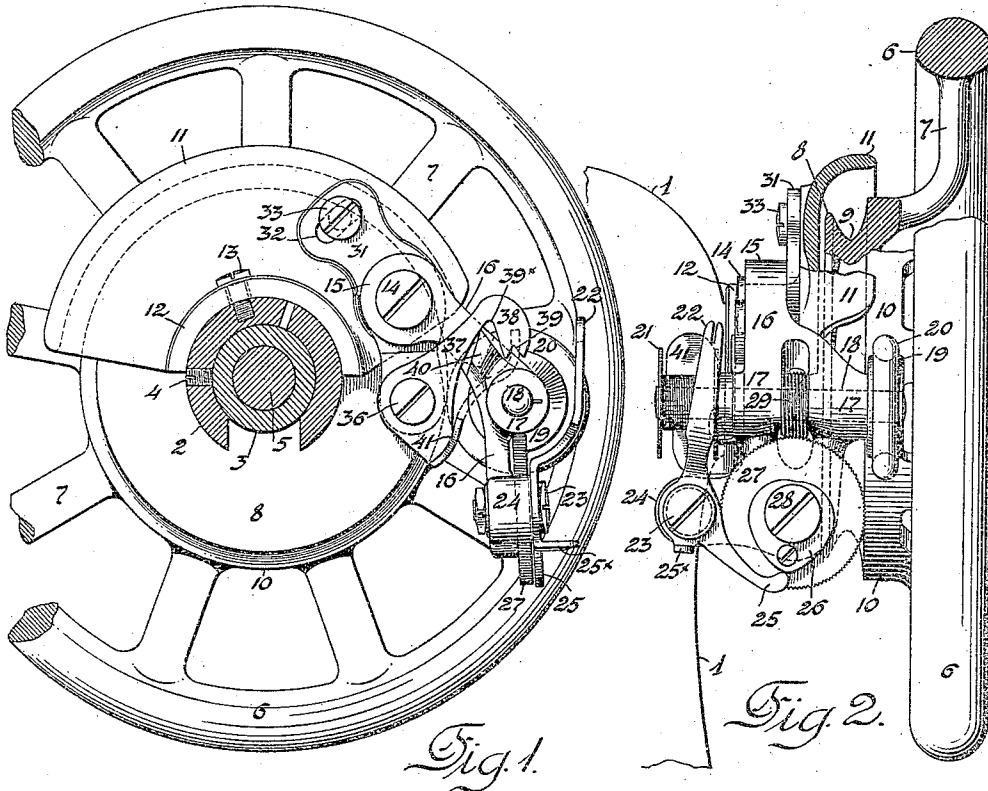


H. McFARLANE.
BOBBIN WINDING DEVICE FOR SEWING MACHINES.
APPLICATION FILED JAN. 29, 1910.

961,154.

Patented June 14, 1910.



WITNESSES:

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BOBBIN-WINDING DEVICE FOR SEWING-MACHINES.

961,154.

Specification of Letters Patent. Patented June 14, 1910.

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To all whom it may concern:

Be it known that I, HUGH McFARLANE, a subject of the King of Great Britain and Ireland and the Isle of Man, and residing at Scotstoun, near Glasgow, Scotland, have invented certain new and useful Improvements in Bobbin-Winding Devices for Sewing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention has for its object to provide a simple and compact form of bobbin-winding device for sewing machines which may be driven either by a belt or by hand operated device applied to the balance-wheel.

It has been common heretofore to provide the spindle of the bobbin-winding attachment with a grooved driving wheel having a rubber rim adapted to run in contact with the highly polished weighted rim of the balance-wheel, which latter became marred by the continued engagement of the driving wheel rim of the bobbin-winder with the balance-wheel.

According to the present invention, the balance-wheel is provided with the usual weighted rim adapted to be grasped by the hand of the operator for control of the machine at certain times and with a laterally extending hub grooved to receive the driving belt intermediate which parts is arranged an annular peripheral runway to receive the yielding rim of the bobbin attachment driving wheel. To the frame of the machine is secured a belt-guard overhanging the grooved hub of the balance-wheel, and this carries a fulcrum-stud upon which is mounted the swinging arm of the bobbin winding attachment in which is mounted a transverse spindle carrying the driving friction-wheel adapted to be shifted into and out of rolling contact relation with the runway of the balance-wheel. The said fulcrum-stud also forms one of the supports of a fulcrum-pin carrying lever having one arm formed with a slot entered by a clamp-screw by which it is adjustably secured to the belt-guard, while another arm of said lever carries a fulcrum-pin upon which is mounted a spring-pressed latch-hook adapted for engagement with a suitable shoulder upon the swinging spindle carrying arm, whereby the attachment is positively locked in operative relation with the balance-wheel. The spindle is provided with the usual bearing portion to receive the

sewing machine bobbin, and the pivotally mounted latch-hook is provided with an arm adapted for engagement with the filled bobbin for disengagement of the hook with the spindle-carrying arm for automatic retraction of the attachment driving wheel with the balance-wheel at the completion of a bobbin-winding operation.

In the accompanying drawings, Figure 1 is a front side elevation of a bobbin-winding attachment in operative relation with a sewing machine balance-wheel, with the supporting shaft and bearing therefor afforded by the sewing machine frame represented in transverse section. Fig. 2 is a side view of the same, with a portion of the sewing machine frame and showing a portion of the balance-wheel and the belt-guard in section. Fig. 3 is a partial front side elevation of the parts represented in Fig. 1 in partial sectional view with the bobbin-winder in retracted position. Figs. 4 to 8 inclusive, are perspective views of different parts of the bobbin winding attachment.

The machine is constructed with the usual frame comprising a bracket-arm having the upright portion or standard 1 provided at its rear end with the bearing boss 2 containing a bushing 3 secured therein by the set-screw 4 and affording a bearing for the main-shaft 5 upon the rearward end of which the balance-wheel is mounted. As herein represented, the balance-wheel comprises the usual weighted rim 6 connected by spokes 7 with the forwardly extending hub 8 having an annular groove 9 to receive a driving belt, and a cylindrical portion 10 intermediate said groove and the rim 6 to afford a runway for the driving wheel of the bobbin-winder.

Overhanging the belt-wheel afforded by the peripherally grooved forward portion of the balance-wheel hub 8 is a segmental belt-guard 11 extending inwardly along the front face of the hub 8 and provided with a segmental flange 12 secured by means of the fastening screw 13 upon the bearing boss 2 of the machine frame. As will be observed, the rearward edge of the belt-guard terminates just beyond the belt-groove 9 of the balance-wheel hub 8 and thus exposes the adjacent runway 10 which is of larger diameter than the grooved portion of the hub and thus has a greater linear speed of movement than the driving belt, and is conse-

quently adapted to impart a higher rate of speed to the bobbin-winder spindle than in bobbin winding attachments actuated directly from the driving belt.

5 Mounted upon the side flange of the belt-guard is a fulcrum-screw-stud 14 upon which is mounted the hub 15 of a swinging arm 16 forked in its opposite end and provided with bearing bosses 17 in which is
10 mounted the rotary spindle 18 which carries the grooved wheel 19 having a yielding rim 20 afforded in practice by a usual form of rubber band. The rearward bearing boss 17 of the swinging arm 16 overhangs the belt-wheel 8 9 and the friction-wheel formed
15 by the grooved pulley 19 and its yielding rim 20 is thus disposed suitably for securing rolling contact relation with the runway 10 of the balance-wheel. The opposite end of
20 the spindle 18 projects beyond the corresponding bearing boss 17 to receive the usual disk bobbin 21 to which the thread is guided by means of the notched vibrating arm 22 of a rock-lever fulcrumed by means of a screw-
25 stud 23 upon a lateral ear 24 of the swinging arm 16 and provided with a second arm 25 engaging an actuating cam 26 upon the worm-wheel 27 pivotally mounted by means of the stud 28 upon an extension of the arm
30 16 and meshing with the worm 29 fixed upon the rotary spindle 18 intermediate the bearing bosses 17.

Mounted intermediate the swinging arm 16 and the belt-guard upon the stud 14,
35 which passes through an aperture 30 therein, is a fulcrum-pin carrying lever having an arm 31 formed with a transverse slot 32 entered by the shank of a clamp-screw 33 tapped into the side flange of the belt-guard and provided with a second arm 34 having
40 an offset portion 35 into which is tapped the fulcrum screw-pin 36. Upon the fulcrum-pin 36 is pivotally mounted the hooked latch-lever 37 having an angularly arranged
45 head 38 with a notch 39 in its operative end adapted to engage a pointed lug or tooth 40 upon the spindle carrying arm 16. The latch-lever 37 is provided with an angularly arranged arm 41 normally disposed adjacent
50 the bobbin-receiving end of the spindle and adapted to be engaged by the thread for shifting the latch-lever as the bobbin becomes filled, in a wellknown manner. Encircling the threaded stud-aperture 42 of
55 the offset portion 35 of the lever arm 34 is an annular chamber 43 housing a coil-spring 44 having one end secured in an aperture 45 therein and the opposite end secured in an aperture 46 in the bottom of a housing
60 chamber 47 surrounding the fulcrum-pin aperture 48 of the latch-lever 37; whereby the latch head 38 is maintained yieldingly in operative relation with the tooth 40 of the swinging lever 16.

65 The head 15 of the lever 16 is formed

with an annular chamber 49 for housing a coil-spring 50 one end of which is secured in an aperture in the bottom of the same and the other extends outwardly through a lateral opening therein for engagement
70 with the edge of the offset portion 35 of the lever-arm 34, whereby the lever 16 is yieldingly maintained in its outer or inoperative position with its friction-wheel retracted from the balance-wheel runway.

75 To maintain the arm 25 of the thread-guiding lever in operative relation with the actuating cam 26, the ear 24 is formed with a chamber 51 surrounding the fulcrum-screw 23 for housing the coil-spring 52, one
80 end of which enters an aperture in the bottom of said chamber and the other end enters an aperture 53 of said lever. By reference to Fig. 8, it will be observed that the thread-guiding lever is provided adjacent
85 its fulcrum-stud 23 with a forwardly extending notched-arm 25* operating in conjunction with the arm 22 in leading the thread from the source of supply to the bobbin.

90 In the use of the device, the arm 16 is normally in the retracted inoperative position represented in Fig. 3, in which the point of the tooth 40 enters the notch 39 of the latch-lever head 38. To throw the
95 mechanism into operation, the arm 16 is pressed inward by the operator, which carries the tooth 40 into the throat 39* of the latch-lever, where it is held by engagement of the inner point of the head 38 with the
100 side of the lug 40, in which position the yielding rim 20 of the driving wheel 19 of the attachment spindle rolls upon the runway 10 of the balance-wheel to rotate the bobbin and impart the requisite to-and-fro
105 movements to the thread-guiding arm 22. This movement continues until, through the engagement of the shifting arm 41 of the latch-lever 37 under the action of the thread wound upon the bobbin serving to retract
110 the latch-lever, the detaining tooth 40 of the arm 16 is released, and the spring-actuated arm 16 is withdrawn until the point of the tooth is arrested by engagement with the outer face of the latch-lever notch 39,
115 when the parts are arrested in the positions represented in Fig. 3.

As will be observed, the latch-lever 37 affords means for positively locking the driving and driven members of the device
120 in operative relation, and the effective frictional engagement is insured by the interposition of a yielding rim upon one of the members between which driving relation is thus effected. As the rubber rim 20 becomes
125 worn or distorted by continued use, the frictional contact between such members becomes impaired, and compensation is provided for this contingency by shifting the effective position of the latch-lever 37. To
130

this end, the clamp-screw 33 may be loosened and the fulcrum-pin carrying lever 31 34 turned to bring the fulcrum-pin 36 nearer the axis of motion of the runway 10, after which the clamp-screw 33 is retightened and the effective operation of the device insured.

It is evident that the present improvement is susceptible of modification in the specific construction and arrangement of parts, and the present invention is not therefore limited to the exact embodiment of the improvement herein shown and described.

Having thus set forth the nature of the invention, what I claim herein is:—

1. The combination with a sewing machine frame, a rotary shaft journaled therein, and a balance-wheel thereon comprising a weighted rim, a laterally extending belt-receiving hub and an intermediate peripheral runway, of a belt-guard overhanging the balance-wheel hub, and a bobbin-winder mounted upon and supported by said belt-guard and provided with a rotary spindle, a friction-wheel mounted on said spindle with a rim adapted for rolling contact with the runway of said balance-wheel, and means for maintaining said friction-wheel in operative relation with said runway.

2. The combination with a sewing machine frame, a rotary shaft journaled therein, and a balance-wheel thereon comprising a weighted rim, a laterally extending belt-receiving hub and an intermediate peripheral runway, of a belt-guard overhanging the balance-wheel hub, and a bobbin-winder mounted upon and supported by said belt-guard and provided with a rotary spindle, a friction-wheel mounted on said spindle with a rim formed of yielding material and adapted for rolling contact with the runway of said balance-wheel, and positively acting retaining means for maintaining said friction-wheel in operative relation with said runway.

3. The combination with a sewing machine frame, a rotary shaft journaled therein, and a balance-wheel thereon comprising a weighted rim, a laterally extending belt-receiving hub and an intermediate peripheral runway, of a bobbin-winder provided with a rotary spindle, a friction-wheel mounted on said spindle with a rim formed of yielding material and adapted for rolling contact with the runway of said balance-wheel, positively acting retaining means for maintaining said friction-wheel in operative relation with said runway, and adjusting means whereby the position of said retaining means may be shifted to compensate for wear of the friction-wheel rim.

4. The combination with a sewing machine frame, a rotary shaft journaled therein, and a balance-wheel thereon comprising a weighted rim, a laterally extending belt-receiving hub and an intermediate peripheral runway, of a bobbin-winder supported by said frame and comprising a swinging arm, a spindle carried thereby, a friction-wheel mounted on said spindle with a rim adapted for rolling contact with the runway of said balance-wheel, a spring connected with said swinging arm for maintaining the friction-wheel normally out of contact with said runway, a fulcrum-carrying lever, a fulcrum-pin thereon, a spring-pressed latch-hook mounted on said fulcrum-pin and adapted to engage said swinging arm to hold its friction-wheel in contact with said runway, automatically acting means for disengaging the latch-hook from said arm, and means for adjusting the fulcrum-carrying lever to shift the position of its fulcrum-pin for the latch-hook to compensate for wear of the friction-wheel rim.

5. The combination with a sewing machine frame, a rotary shaft journaled therein, and a balance-wheel thereon comprising a weighted rim, a laterally extending belt-receiving hub, and an intermediate peripheral runway, of a bobbin-winder comprising a swinging arm, a fixed fulcrum-stud supported upon the frame and on which said swinging arm is mounted, a spindle carried by said swinging arm, a friction-wheel mounted on said spindle with a rim adapted for rolling contact with the runway of said balance-wheel, a spring connected with said swinging arm for maintaining the friction-wheel normally out of contact with said runway, a fulcrum-carrying lever mounted upon said fulcrum-stud and having one arm carrying a fulcrum-pin and another arm formed with a transverse slot, a clamp-screw entering the slot in said arm and adapted to adjustably secure the fulcrum-carrying lever in different angular relations upon said fulcrum-stud, a spring-pressed latch-hook mounted on the fulcrum-pin of said lever and adapted to engage said swinging arm to hold its friction-wheel in contact with said runway, and automatically acting means for disengaging the latch-hook from said arm at the completion of a bobbin-winding operation.

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

HUGH McFARLANE.

Witnesses:

WALLACE FAIRWEATHER,
JOHN ARMSTRONG, Junr.