(No Model.)

G. W. & G. H. RANDALL.

BOBBIN WINDER.

No. 474,924. Patented May 17, 1892.

Fig. 1.

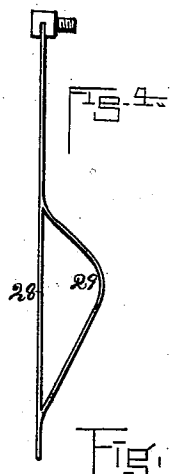


Fig. 4.

Fig. 3.

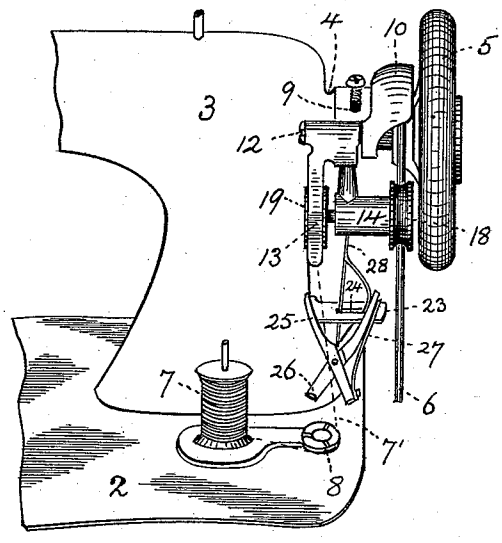
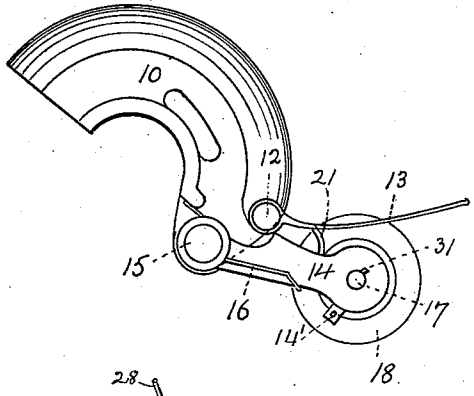
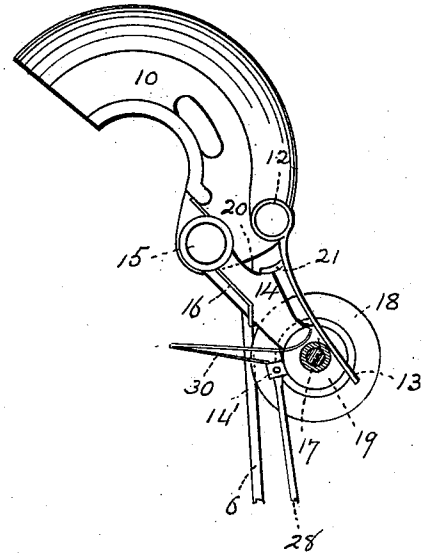


Fig. 2.





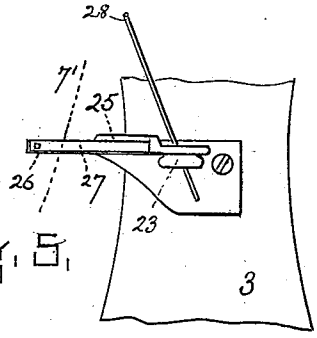


Fig. 5.

Witnesses.

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BOBBIN-WINDER.

SPECIFICATION forming part of Letters Patent No. 474,924, dated May 17, 1892.

Application filed October 26, 1891. Serial No. 409,814. (No model.)

To all whom it may concern:

Be it known that we, GEORGE W. RANDALL and GILBERT H. RANDALL, citizens of the United States, residing at Plympton, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Bobbin-Winders; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form a part of this specification.

This invention relates to mechanism for filling bobbins employed on sewing-machines.

Our improvements consist in certain operating parts so arranged that when the bobbin is filled the thread is severed, while the bobbin is stopped from rotating. The several component parts and their respective functions will be more fully hereinafter described.

The drawings accompanying this specification represent, in Figure 1, a perspective view of the mechanism embodying our invention for winding bobbins applied to sewing-machines. Fig. 2 is an elevation of that side of the mechanism adjacent to the goose-neck of the machine, the cutting implement being omitted, the several parts being positioned for winding a bobbin. Fig. 3 is a similar view as in Fig. 2 with the parts in position after the filling of a bobbin. Fig. 4 is a side elevation of the rod for operating the cutting device. Fig. 5 is an end view of the goose-neck, in part showing the relative positions of the thread-severing implement and its controlling-rod.

In said drawings, 2 represents a portion of the work-plate of a sewing-machine surmounted with a goose-neck 3, provided at its rear end with a boss 4, through which extends the main shaft (not shown) of the machine. Upon said shaft is mounted the pulley 5, actuated by the belt 6. The spool is shown at 7, the thread at 7′, and a tension at 8.

Adjustably mounted upon the boss 4, as shown, by the slot 9 and its set-screw is positioned a shield 10 to cover the belt. Laterally and extending inwardly or toward the goose-neck is affixed a short pin 12, upon which is loosely hung an operating-lever 13, the position of which will be explained more fully hereinafter. Furthermore, a hanger-arm or pivoted journal-support 14 is secured at 15 to the end of said shield and is pressed upward by a spring 16, one extremity of the latter bearing against the shield, the other against the under side of the arm 14 to normally hold it in an upraised position, as in Fig. 3. Transversely of said hanger-arm and at the free extremity thereof is placed the bobbin-spindle 17, upon one end of which is fastened a grooved wheel 18, while at the other end, which projects beyond the said hanger, is to be placed the bobbin 19. The upper edge of the hanger-arm is formed with an inclined straight face and a recessed portion 20 to receive a pendent spur 21. Moreover, when the operating-lever is depressed (see Fig. 2) and the spur engages the recess the hanger-arm is swung down and back and the grooved wheel is held in contact against the belt 6, the friction causing the bobbin-spindle and bobbin thereupon to revolve.

By reference to Fig. 1 it will be seen that the wheel 18 is in alignment with the belt 6, while the operating-lever 13 bears the same relation to the bobbin. Hence when the latter is empty and the several parts are as shown in Fig. 2 the lever rests upon the center part of the bobbin. As the bobbin fills this lever is raised at its free end, while the overlap of the spur 21 in the recess 20 is such that said parts are disengaged at the moment the bobbin is completely filled. Thus at the completion of this act the spring 16 is free to rock the hanger-arm upward, as shown in Fig. 3, while the wheel is thereby removed from contact with the driving-belt and the bobbin comes to rest.

In connection with the above act of winding and filling it becomes necessary to sever the thread 7′ from the spool 7, and this we effect as follows: Attached to the end of the goose-neck at a point beneath the boss 4 is a plate formed with a horizontal lip 23, in which is cut a longitudinal opening 24. Furthermore, affixed to said plate is a fixed cutter-bar 25, to which is pivoted a movable blade 26, forming a thread-cutting implement. A

spring 27 serves to hold the blades normally shut.

To provide for the closing of the cutting implement and severance of the thread at the moment the bobbin is filled, an operating-rod 28 is provided. Said rod is pivotally attached to a lug 14′, carried by the free end of the hanger arm or lever 14, and extends downwardly through the opening 24 in the lip 23. A bend or offset 29 or a plate of suitable shape to serve the purpose of a cam is secured to said rod and serves to engage the free non-cutting end of the movable bar 26 and holds the latter open against the pressure of the spring 27. Said rod is thus adjusted to reciprocate in a vertical path coincident with the rocking of the hanger-arm to which it is attached. Thus at the time an empty bobbin is to be filled and when the actuating-lever 13 is depressed to hold the grooved wheel against the belt 6, and thereby impart rotation to the bobbin, such act forces the rod downwardly, the bent portion or offset 29 pushing the free end of the movable bar outwardly and opening the cutting implement. Conversely upon filling of the bobbin disengagement of the spur 21 from the recess in the hanger-arm and upward oscillation of the latter occur, the rod being lifted suddenly, while a quick closing action of the movable bar is allowed, thereby severing the thread. By the arrangement of the above-described parts two results are accomplished simultaneously with the filling of the bobbin—namely, cutting of the thread and cessation in the movement of the bobbin.

The operation is as follows: In the act of filling a bobbin, the relative positions of the parts being shown in Fig. 1, the special positions of such parts are as follows: The lever 13 and hanger arm or lever 14 are as in Fig. 3, while the cutting implement is closed. A bobbin is now placed upon the spindle 17 and the end of the lever depressed until the spur 21 engages in the recess 20. The wheel 18 is thereby brought into frictional contact with the belt 6, and these several parts are now interlocked and rigid in position, as shown in Fig. 2. The downward rocking or swinging movement of the hanger arm or lever 14 has caused the rod 28 to advance down through the opening 24, while the offset 29 wipes against the free end of the movable bar of the cutting implement, which is now held open. The thread 7′ passes across and between the blades. (See Fig. 5.) Rotation of the bobbin now commences and continues, the winding of the thread thereupon gradually raising the free end of the said lever until the spur is disengaged from the recess 20 in the hanger-arm. At this same moment the spring 16 thrusts the hanger-arm upwardly to its original position, (see Fig. 3,) while the rod 28 retreats from the aperture 24 and the thread is severed. Coincident with the upward movement of the hanger-arm the wheel 18 is separated from contact with the belt 6. The lever holds the bobbin on its winding-spindle when in the act of filling, while a light spring 30 in Fig. 2 retains it when the lever is thrown off or after the bobbin is filled, in case it is not removed. A small pin 31 (see Fig. 3) engages with the bobbin to cause the latter to rotate in unison with said spindle.

What we claim is—

1. In a bobbin-winder, the combination, with an oscillating hanger arm or lever and a revoluble bobbin-spindle mounted thereupon, of a locking-lever engaging with said hanger arm or lever and actuated by the accumulating thread, a cutting implement through which said thread passes, and a rod through which the action of said implement is controlled, the said rod being operatively connected with the hanger arm or lever and actuated thereby to release the cutting implement at the time the bobbin is filled, substantially as and for the purposes specified.

2. In a bobbin-winder, a stationary shield, an oscillating hanger arm or lever affixed thereto and carrying a bobbin-spindle with a grooved wheel, and a locking-lever likewise pivoted upon said shield adapted to engage said hanger-arm and operated by the accumulating thread upon the bobbin to release the hanger-arm, combined with a cutting implement and an operating-rod connected with the hanger-arm and actuated by the movement of the latter to release the cutting implement at the time of oscillation of said hanger-arm consequent upon the filling of the bobbin, substantially as explained.

3. The combination, with a sewing-machine, a driving-belt, its stationary shield, an oscillating spring-actuated hanger-arm carrying the bobbin-spindle and driving-wheel, and locking-lever pivoted upon said shield and controlled by the thread accumulating on the bobbin, of the cutting implement and interconnecting means between said implement and the oscillating hanger-arm whereby the cutting implement is caused to act to sever the thread simultaneously with the completion of the filling of the bobbin and the release of the hanger-arm, substantially as stated.

4. The combination, with an oscillating hanger-arm, the revoluble bobbin-spindle at its free end and furnished with a driving-wheel, and the locking-lever released by the accumulating thread, of a cutting implement having a movable member, its actuating-rod pivoted upon the hanger-arm, an apertured lip in which said rod is adapted to reciprocate, and the offset upon said rod to engage the movable member of the cutting implement, substantially as set forth and stated.

In testimony whereof we affix our signatures in presence of two witnesses.

GEORGE W. RANDALL.
GILBERT H. RANDALL.

Witnesses:
LAURA W. KNOWLES,
WILLIAM PERKINS.