W. DUCHEMIN.
Bobbin-Winder.

No. 205,532. Patented July 2, 1878.

Fig. 1.

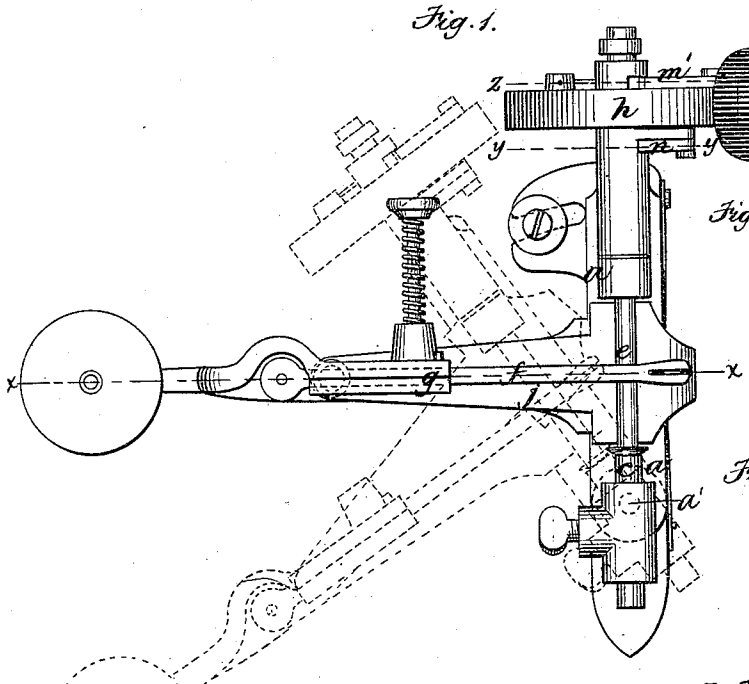


Fig. 4.

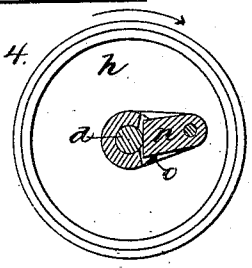


Fig. 5.

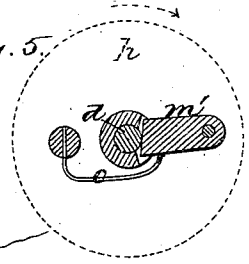


Fig. 2.

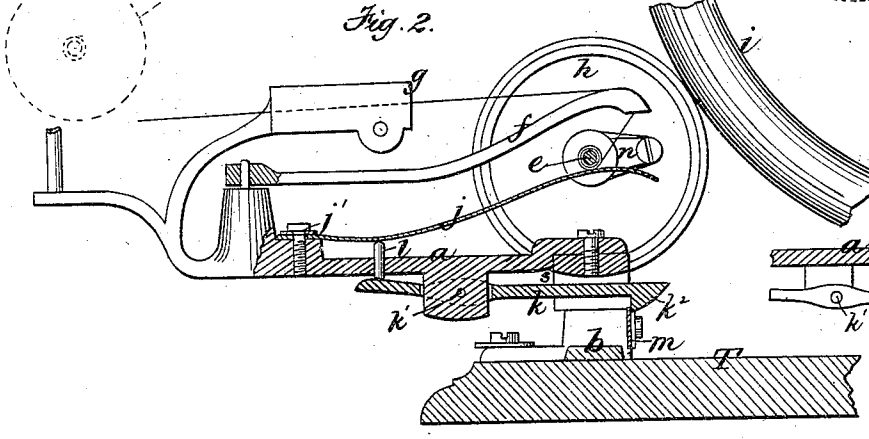


Fig. 6.

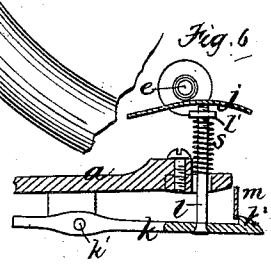


Fig. 7.

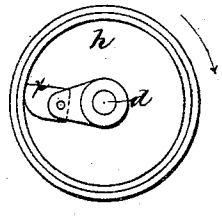
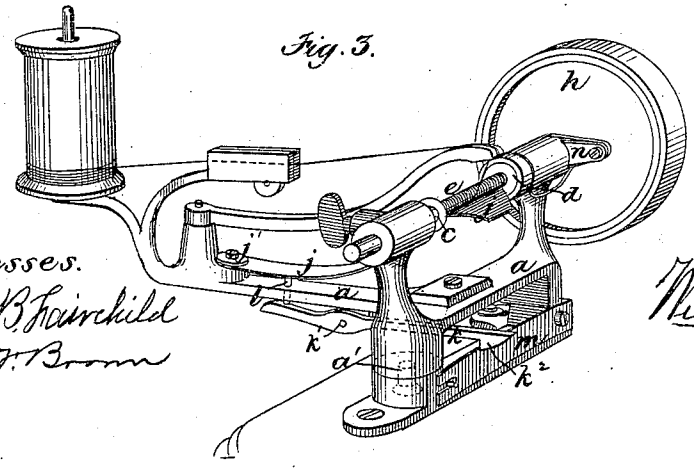


Fig. 3.



Witnesses.
E. B. Fairchild
C. F. Brown

Inventor.
Willm Duchemin

UNITED STATES PATENT OFFICE.

WILLIAM DUCHEMIN, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN BOBBIN-WINDERS.

Specification forming part of Letters Patent No. **205,532**, dated July 2, 1878; application filed October 11, 1877.

To all whom it may concern:

Be it known that I, WILLIAM DUCHEMIN, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Bobbin-Winders, of which the following is a specification:

In the accompanying drawings, forming a part of this specification, Figure 1 represents a top view of a bobbin-winder embodying my improvements. Fig. 2 represents a sectional view of the same. Fig. 3 represents a perspective view of the same. Figs. 4 and 5 represent sectional views of the devices for preventing the backward rotation of the bobbin. Figs. 6 and 7 represent modifications.

Similar letters of reference refer to like parts in all the figures.

The first part of this invention relates to bobbin-winders of the class in which the frame of the winder is pivoted to a stationary support, such as the table of a sewing-machine, and is arranged to swing in a substantially horizontal plane, so as to move the friction-wheel by which the bobbin is revolved toward and away from the fly-wheel of the sewing-machine, thereby bringing said friction-wheel into or out of contact with the fly-wheel, and thus rotating or stopping the bobbin.

This part of my invention has for its object, first, to enable the friction-wheel of the bobbin-winder to be held with a yielding pressure against the fly-wheel of the machine while the bobbin-winder is in operation, so as to insure the constant rotation of the friction-wheel by contact with the fly-wheel, regardless of any inequalities or irregularities in the periphery of either of the wheels; secondly, to provide means for automatically disconnecting the friction-wheel from the fly-wheel when the bobbin is full of thread, and thus stopping the operation of the winder.

The second part of my invention relates to all bobbin-winders employing a center or shaft for rotating the bobbin, and a friction-wheel adapted to be rotated by contact with a fly-wheel, and to rotate the shaft and bobbin.

The object of this part of my invention is to prevent the backward rotation of the bobbin by its rotating mechanism, thus rendering it impossible to slacken the thread during the operation of winding by the back action of the fly-wheel, which action is sometimes necessary for the adjustment of needles or for remedying defects in sewing.

To the above-named ends my invention consists in the several improvements, which I will now proceed to describe, and point out in my claims.

In the drawings, T represents a stationary bed or support, which may be the table of any ordinary sewing-machine. *a* represents the general frame of a bobbin-winder, said frame being pivoted at *a'* to a base-piece, *b*, rigidly attached to the table T, the frame being arranged to swing on its pivot in a substantially horizontal plane. The frame *a* is provided with the usual fixed center *c* and rotary center or shaft *d*, and is also provided with a vibrating arm or thread-carrier, *f*, and a fixed thread-guide and tension device, *g*, for delivering the thread automatically to the bobbin, as fully described in Letters Patent heretofore granted to me.

The rotary center or shaft *d* is provided with a friction-wheel, *h*, to be hereinafter described, and this wheel is adapted to bear against the fly or other wheel *i* of a sewing-machine, and be revolved thereby in the usual manner, or to be removed from the wheel *i* by turning the frame *a* on its pivot, as shown in dotted lines in Fig. 1. For holding the friction-wheel *h* against the wheel *i* with a yielding pressure, and for automatically disconnecting the friction-wheel from the fly-wheel, I prefer to employ the devices which I will now describe.

j represents an elastic metal plate, which is pivoted at j^1 to the frame *a*, and is adapted to bear against the under side of the bobbin, and to be depressed by the accumulation of thread on the bobbin, like the similar plate described in my above-named patent. *k* represents a hooked lever, pivoted at k^1 to the frame *a*. *l* represents a connecting pin or rod, which is interposed between the plate *j* and lever *k*, and is adapted to slide vertically in an orifice in the frame *a*, so that it will be moved downwardly by the depression of the plate *j*, and thus tilt the lever *k* on its pivot. One end of the lever *k* is provided with a hook, k^2. *m* represents an elastic plate or strip of metal,

attached to the base b in such position that its upper edge will engage with the hook k^2, as shown in Figs. 2 and 3.

The hook k^2 and plate m are so arranged that they can only be engaged with each other when the friction-wheel h is in contact with the fly-wheel i, and in order to effect such engagement it is necessary to spring the central part of the plate m toward the hook k^3, as shown in Fig. 3; hence the plate, in its effort to regain its normal position, constantly draws on the hook k^2, and, through the latter, the frame a presses the friction-wheel h against the fly-wheel i with a yielding pressure while the apparatus is in operation, and thus prevents any irregularities in the periphery of either wheel from interfering with the rotation of the friction-wheel.

When the bobbin has been filled to a sufficient extent the accumulation of thread depresses the plate j, and the latter, through the pin l, turns the lever k on its pivot, so as to raise the hook k^2 and disengage it from the plate m, when the pressure of the latter being removed the frame a will turn on its pivot a' sufficiently to stop the winding operation.

A modification is shown in Fig. 6, in which the pin l is attached to the lever k between the hook k^2 and the fulcrum k^1, and is arranged to bear against the plate j, near the outer end of the latter.

The hook k^2 is arranged to engage with the lower edge of the plate m, and to be depressed by the pin l when the plate j is depressed. In this case the spring s, for holding the hook in contact with the plate m, is arranged on the pin l, and bears against a nut, l', on the upper end of the latter.

The friction-wheel h is journaled on the shaft or center d, so as to turn backwardly independently of the latter. I provide the wheel h with a dog or lever, n, which is pivoted at one end to the wheel h, and bears at its opposite end against the shaft or center d, this end being beveled and arranged in such manner that when the wheel is revolved in a forward direction, as indicated by the arrow, the lever m will lock the wheel h to the shaft d, and cause the two to revolve together; but when the wheel is revolved in the opposite direction, as by the back action of the fly-wheel i, the lever will release the shaft d and allow the wheel h to revolve independently of said shaft.

To prevent the shaft d from being revolved backwardly by the wheel h, I provide a dog or lever, n, which is pivoted to a stationary arm, o, formed on the sleeve or bearing in which the shaft d is located, this dog or lever being adapted to bear at its inner end against the shaft d in such manner as to prevent its backward rotation, as shown in Fig. 4.

The levers m' n are held in yielding contact with the shaft d by suitable springs o.

I do not limit myself to the precise devices shown for preventing the backward rotation of the bobbin, as any suitable devices may be employed for this purpose without departing from the spirit of my invention. For instance, the wheel h may be rigidly attached to the shaft d, and a cam, x, may be pivoted to a stationary arm on the sleeve in which the shaft revolves, this cam being arranged to bear against the inner periphery of a flange on the wheel h, as shown in Fig. 7, in such a manner as to allow the wheel and shaft to revolve freely in one direction, and prevent their rotation in the opposite direction, so that when the fly-wheel i is reversed it will slip on the wheel h, the latter, with its shaft d, remaining stationary.

From the foregoing it will be seen that a bobbin-winder is produced which is adapted for application to any sewing-machine, and is certain and effective in the operations described, remedying many defects which have heretofore existed.

I claim as my invention—

1. The combination of the horizontally-swinging frame, devices, substantially as described, for holding the frame and releasing it when the bobbin is filled, and a spring which acts to maintain the friction-pulley with a yielding pressure against the fly-wheel, and is thrown out of action by the aforesaid devices when the bobbin is filled, as set forth.

2. The combination of the horizontally-pivoted frame a of a latch-lever, k, a pin adapted to be moved by the bobbin and operate said lever, and a spring-plate, m, arranged to be caught by the shoulder of the lever, substantially as set forth.

3. A bobbin-winding device arranged adjacent to and operated by the driving-wheel i of a sewing-machine, and provided with devices, substantially as set forth, whereby the reverse motion of the bobbin-holding shaft is prevented.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses this 5th day of October, 1877.

WILLIAM DUCHEMIN.

Witnesses:
E. B. FAIRCHILD,
C. F. BROWN.