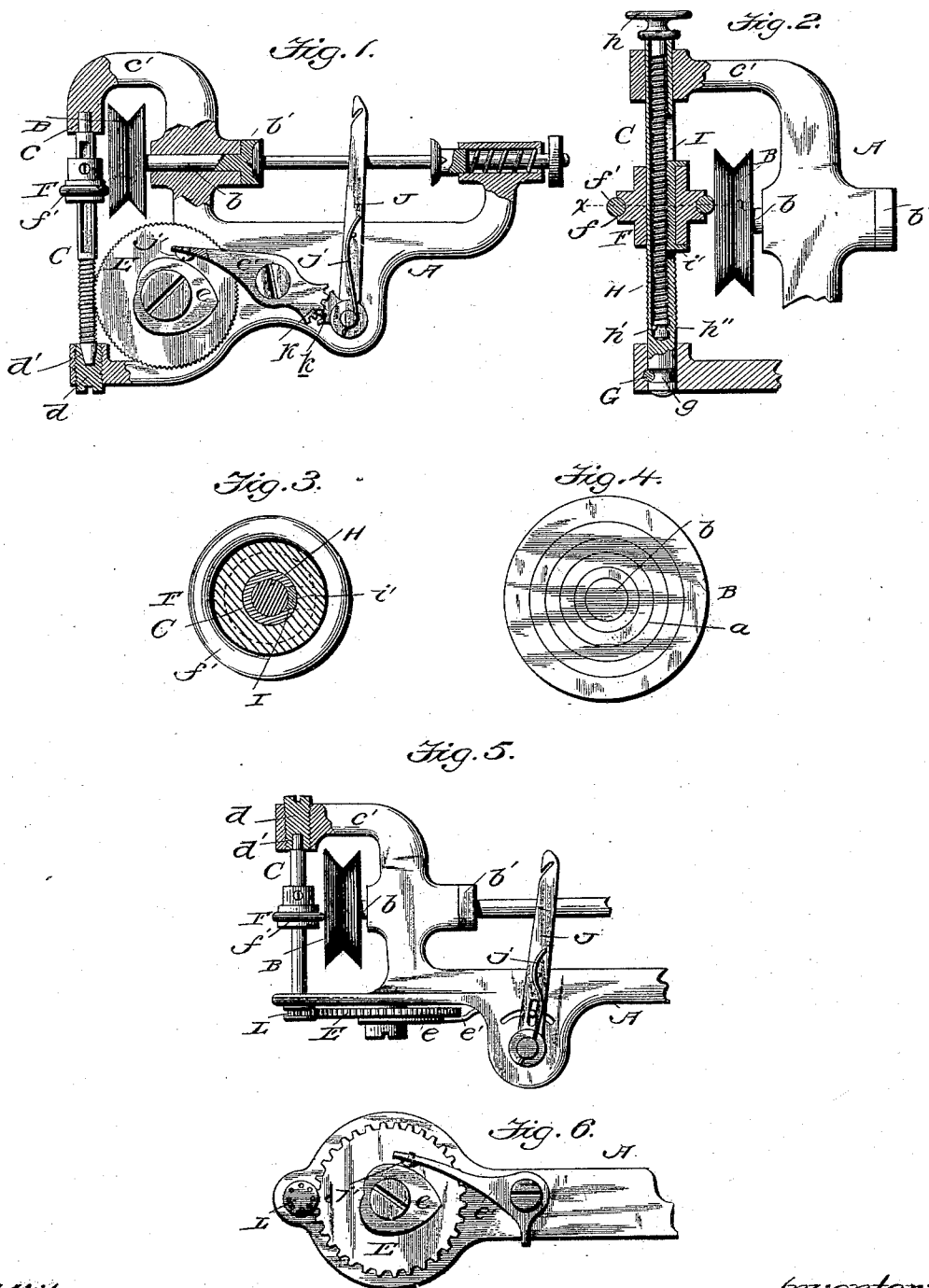


(No Model.)

J. B. PRICE.
BOBBIN WINDER.

No. 474,187.

Patented May 3, 1892.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN B. PRICE, OF WOLLASTON, MASSACHUSETTS.

BOBBIN-WINDER.

SPECIFICATION forming part of Letters Patent No. 474,187, dated May 3, 1892.

Application filed January 20, 1892. Serial No. 418,686. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. PRICE, a citizen of the United States, residing at Wollaston, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Bobbin-Winders; and I 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.

My invention relates to improvements in automatic bobbin-winders for sewing-machines; and the object is to provide a simple device adapted to wind threads of different sizes which can be readily operated and adjusted.

With these and other ends in view my invention contemplates a pulley, a spindle carrying a friction-roller arranged in contact with the pulley and adapted to be adjusted on the spindle, and devices intermediate of the spindle and a traversing-arm to give to the latter the desired reciprocating movement; and the invention further consists in the combination of devices and construction and arrangement of parts, as will be hereinafter fully described and claimed.

To enable others to more readily understand my invention, I have illustrated the same in the accompanying drawings, in which—

Figure 1 is a side elevation, partly in section. Fig. 2 is a sectional view showing a modification of the means for adjusting the device to wind threads of different sizes. Fig. 3 is a sectional view on the line $x x$ of Fig. 2. Fig. 4 is a side view of the pulley with the circles thereon. Fig. 5 is a side elevation, partly in section, showing a slightly-modified construction; and Fig. 6 is a bottom plan view of Fig. 5.

Referring to the drawings, in which like letters of reference denote corresponding parts in all the figures, A designates the frame, which is constructed as shown in the drawings and as hereinafter referred to. The pulley B, to which motion is communicated from the machine by the usual belt, is secured on a horizontal shaft b , extending entirely through the frame and having a step or bearing b' at its inner end to receive the bobbin. The bobbin is held in place by the usual spring-pressed arbor journaled in the opposite end of the frame, and the shaft

b is somewhat longer than its bearing in the frame, so that when the bobbin is in place the arbor will be forced against the bearing b' by its spring and the pulley B also brought into contact with the friction-roller; but when the bobbin is removed the shaft will move endwise in its bearing to release the pulley from contact with the friction-roller, so that the friction-band on said roller will not become flattened.

The spindle C is provided with a worm screw-thread at its lower end. The upper end is fitted to rotate in a socket c of an arm c' of the frame, while its other end is stepped in the socket d' of an adjusting-screw d , arranged on a downward extension of the frame. The lower end of this threaded spindle meshes with the worm or gear wheel E, operating on a small lug secured in the frame. This wheel also carries a cam e , and with this cam contacts one end of a lever e' , which is connected by intermediate devices with the traversing arm to give to the same the proper reciprocating movement.

To communicate the motion of the pulley B to the traversing arm through the mechanism above described, I provide a friction-roller F, which is secured on the spindle so as to be capable of an adjustment longitudinally thereof and radially to the driving-pulley, and said roller is provided with an annular groove f to receive an elastic friction-ring f' , which is adapted to contact with the face of the pulley. This face of the pulley is inscribed with a series of concentric circles a , by which the movement of the traversing arm is regulated according to the size or diameter of the cotton or thread to be wound. This is accomplished by simply adjusting the friction-roller on the spindle, so that the friction-band will contact with the face of the pulley near to or remote from the axis of the same and on the line indicated by a particular circle, according as the grade of the cotton is coarse or fine. It is obvious that in the finer grades of thread the traversing arm need not reciprocate as rapidly as in the coarser grades, and in the former case the friction-roller is adjusted to operate closer to the axis of the pulley, while in the latter case it is adjusted away from the center and toward the outer edge of said pulley. By this construc-

tion and adaptation the device can wind threads of different grades in a proper and effective manner and maintain in each instance a uniform tension on the thread and a relative distribution of the thread on the bobbin. The friction-roller may be secured on the spindle by a key or feather, as shown in Fig. 1, in which case the key is loosened to permit the roller to be adjusted and tightened to retain the same in place; or it may be fastened by the device illustrated in Figs. 2 and 3, which I will now describe.

The hollow threaded spindle C extends entirely through its bearing in the arm *c'* of the frame, and it is secured in place at its lower end by a pin G, which passes through a frame and is locked in a groove *g* in the lower end of said spindle, or the adjusting-screw *d* (illustrated in Fig. 1) may be employed, as desired. Within this spindle C is a threaded adjusting-rod H, having a thumb-nut *h* on its upper end just above the hollow spindle, and it is held therein by a pin *h'*, driven through the spindle and locked into a groove *h''* on the lower end of the screw. The friction-roller F is arranged on the spindle in the usual manner and is adapted to actuate the same when in contact with the pulley. The spindle has a slot I extending throughout its length, and a threaded gib *i'*, carried by the friction-roller, is adapted to contact with the threaded adjusting-rod H through the slot I. The friction-roller F is secured on the spindle in a practically rigid position, and the gib *i'* is supported loosely on said roller, the screw turning with the spindle. When it is desired to adjust the friction-roller to adapt the device for a different grade of thread, the nut *h* is turned to rotate the adjusting-rod H, and the gib *i'*, carried by the friction-roller and arranged in contact with said screw through the slot in the spindle, will move the roller to the desired position as said screw is turned.

The lever *e'*, which is actuated by the cam *e*, is arranged in engagement with the traversing arm J and moves the same back and forth, according as it is actuated by the cam. A spring *j* presses against said traversing arm and holds the lever in engagement with the face of the cam, and I also provide an adjusting-screw *j'* on the end of the lever, which is arranged in engagement with the cam. The connection between the lever and traversing arm may be of various forms, and I have shown in Fig. 1 a toothed segment K on said lever arranged to mesh with a similar segment *k* on the traversing arm. Instead of using the segments K *k*, I may construct the lever *e'* as shown in Figs. 5 and 6, which is a much simpler form.

I am aware that changes in the form and proportion of parts and details of construction may be made without departing from the spirit or sacrificing the advantages of my invention—as, for instance, the lower end of the spindle may be provided with cog-teeth L to engage with a gear-wheel, as E—and I there-

fore reserve the right to make such changes as fall within the scope of my invention.

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

1. In an automatic bobbin-winder, the combination, with a frame and the spring-pressed arbor, of a horizontal shaft journaled in said frame and having the bearing *b'*, adapted to receive a bobbin between itself and the spring-pressed arbor, said shaft having a limited endwise movement in the frame and carrying a pulley, the traversing arm, and means intermediate of the traversing arm and the pulley to communicate vibrating motion to said arm, substantially as described.

2. In an automatic bobbin-winder, the combination, with a frame, of a horizontal shaft having a limited endwise movement therein, the bearing *b'* and spring-pressed arbor adapted to receive a bobbin between them, the pulley carried by the shaft, the spindle arranged in the frame parallel with the face of said pulley, an adjustable friction-roller carried by the spindle and arranged in contact with the pulley, the traversing arm, and gearing intermediate of said arm and the spindle, whereby the arm is reciprocated as the pulley revolves, substantially as described.

3. In an automatic bobbin-winder, the combination, with a frame, of the pulley, a spindle arranged parallel with the face of the pulley, the friction-roller carried by said spindle and adapted to be adjusted longitudinally thereof and arranged in contact with the face of the pulley, the traversing arm, and devices intermediate of the spindle and said arm to reciprocate the latter, substantially as described.

4. In an automatic bobbin-winder, the combination, with a frame, a shaft journaled in said frame and adapted to rotate the bobbin, a pulley carried by said shaft and having its outer face inscribed with a series of concentric circles, a spindle parallel with the face of the pulley, a friction-roller adapted to be adjusted on the spindle and arranged in contact with the pulley, a traversing arm, and means intermediate of the spindle and said arm to reciprocate the latter, substantially as described.

5. In an automatic bobbin-winder, the combination, with a frame, of a shaft journaled in a bearing in said frame, a pulley carried by said shaft, the bearing *b'* and spring-pressed arbor adapted to receive a bobbin between them, a spindle arranged parallel with the face of said pulley, a friction-roller adjustably secured on said spindle and provided with an annular groove, an elastic friction-ring fitted in said groove, the traversing arm, and gearing intermediate of said arm and the spindle to reciprocate the arm, substantially as described.

6. In an automatic bobbin-winder, the combination, with a frame, the pulley, a threaded spindle carrying a friction-roller adapted to

engage with the pulley, a toothed wheel having a cam and adapted to be operated by the spindle, a traversing arm, and a lever pivotally secured on the frame and having one arm arranged in contact with the cam and its other arm adapted to reciprocate the traversing arm, substantially as described.

7. In an automatic bobbin-winder, the combination, with a frame and the pulley, of a threaded spindle arranged by the side of the pulley, a friction-roller carried by the spindle and adapted to be adjusted longitudinally thereof, a toothed wheel journaled on said frame and arranged to engage with the spindle, a cam rigid with the wheel, a traversing arm pivoted on the frame and having a toothed segment, a lever having a set-screw at one end to bear against the cam, and a toothed segment on its other end to mesh with the segment on the traversing arm, substantially as described.

8. In an automatic bobbin-winder, the combination, with a frame, a pulley, a hollow threaded spindle journaled in bearings in said frame, the traversing arm, gearing intermediate of the spindle and said arm to actuate the latter, a friction-roller carried by the spindle, and means arranged within said spindle to adjust said friction-roller longitudinally of the spindle, substantially as described.

9. In an automatic bobbin-winder, the combination, with a frame and a pulley, of a hollow threaded spindle journaled in bearings in the frame, the traversing arm, gearing intermediate of the spindle and said arm to actuate the latter, a friction-roller arranged on said spindle, a gib carried by said roller, and a threaded adjusting-rod arranged within the spindle and meshing with the toothed face or edge of said gib through a slot in the spindle, substantially as described.

10. In an automatic bobbin-winder, the combination, with a frame, a horizontal shaft journaled in said frame, a bearing *b'* and spring-pressed arbor adapted to receive a bobbin between them, of a pulley, a hollow threaded spindle journaled in bearings in the frame, the traversing arm and gearing intermediate of said arm and the spindle to reciprocate the latter, a friction-roller arranged on the spindle, a threaded gib carried by the roller, and a threaded adjusting-rod within the spindle, arranged to mesh with the gib to adjust the roller, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN B. PRICE.

Witnesses:

J. F. MCKENNEY,
G. SHERMAN.