A. P. Glover.

Spooling Mach.

No. 50,575. Patented Oct. 24, 1865.

Witnesses.
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IMPROVEMENT IN MACHINERY FOR SPOOLING THREAD.

Specification forming part of Letters Patent No. **50,575**, dated October 24, 1865.

To all whom it may concern:

Be it known that I, A. B. GLOVER, of Yonkers, in the county of Westchester and State of New York, have invented a new and useful Improvement in Machines for Spooling Thread; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an elevation of a spooling-machine made according to my invention. Fig. 2 is an elevation of a cross-section taken on the line *y* of Fig. 1. Fig. 3 is an elevation of a cross-section taken on the line *x* of Fig. 1. Fig. 4 is a plan of a section taken on the horizontal line *z* of Fig. 1.

Similar letters of reference indicate corresponding parts.

The object of this invention is to produce a spooling-machine which will wind a spool of silk, cotton, or other thread automatically and stop the instant the spool is full. Among other novel features in its construction is the mode of disconnecting the spindle from the shaft or pulley which drives it; also, a peculiar construction of a slide whose position determines the distances to be traveled by the thread-guide in laying the courses of thread on the spool.

A designates the frame of the machine.

C is the spindle, upon the front end of which the spool to be wound is placed. H is a friction-pulley upon said spindle. It is driven by means of frictional contact with the large pulley B′ of the shaft B directly beneath.

D is a traverse-rod, placed at about the same height as the spindle, and carrying on its front end, beyond the frame, a thread-guide, *d*, of the usual construction. The spindle C, shaft B, and traverse-rod D have their bearings in the sides of the frame A. E is a shaft, also running in the said frame, which has cut thereon right and left hand screw-threads. The traverse rod D carries a pendent frame, F, which is curved where it passes the shaft E, so as to pass without touching it. This frame carries two half-nuts, *f f′*, at opposite ends and different sides, one of which, *f*, is seen above the plate L. The other, *f′*, is concealed by the screw-threaded shaft, but its place is indicated in red outline above the plate K. These nuts have screw-threads cut on their inner faces to match the screw-threads of the shaft E, with which they are brought in contact in alternation, as hereinafter explained.

K is a plate, extending downward from the lower edge of the swinging frame, near its left-hand, side far enough to be able to engage the teeth of the cogged wheel *h* when it takes a position over that wheel. The lower left-hand corner of said plate is beveled off to enable it the better to enter between its teeth when the wheel is to be moved. L is another plate, also extending downward from the lower edge of the frame F, but near its opposite end. This plate terminates in an angle the sides of which are equal. Its length and position are such as to enable it to engage with the angular upper end of a slide, I, which is moved up and down at certain times in a stand, J, secured to the floor of the machine.

G is a shaft, also turning in bearings in the sides of the frame A. Its place is beneath the shaft E, and it passes through the upper part of the stand J, and carries a snail-shaped cam, *g*, which rotates between the sides of the stand and in a vertical slot cut for it in the slide I, (see Fig. 1.) The outline of the cam is seen in Fig. 2. Its rotation gradually lifts the slide, and so elevates its angular top more and more past the angular end of the plate L, the effect of which is to cause that plate to have a longer traverse across the faces of the slide, as hereinafter mentioned. The shaft G carries also a toothed wheel, *h*, whose place is beneath the middle of the left-hand screw-thread of the shaft E. A snail-shaped cam, *p*, is fixed on the the shaft near its left-hand end. (See Figs. 1 and 4 and the dotted outline thereof in Fig. 3.) This cam acts upon the lower end of a latch-bar, N, to throw it out of its engagement with the long end of a lever, O, (seen most clearly in Fig. 3.) The right-hand side of the frame supports a bracket or table, T, which projects inward over the slide I, and is divided into two parts, one of which is on either side of the change-plate L. Each part of said bracket carries a finger, (designated *r r′*,) which are kept pressed inward toward the change-plate by the opposite ends of a two-armed spring, *s*.

O is a three-armed lever, secured by a screw to the inside of the back end of the machine, the short end of which supports the bearing of the adjacent end of the shaft B. The long end of said lever extends toward the latch N, which swings against and engages it when the long arm of said lever has been brought down by means of the treadle-connecting rod U, thereby holding the bearing of the shaft in its highest position and bringing its friction-pulley B′ into contact with the pulley H on the spindle C. The lever O is released from the latch N whenever the toe of the cam *p* reaches the latch and pushes it outward, by which action the shaft B is lowered and the pulleys B′ and H are separated, so that the spindle C ceases to revolve. O′ is the upper one of the three arms of the lever O. It is bent so as to form a friction-brake for the pulley H, against which it is thrown when the pulley B′ is lowered, as above explained, so as to instantly stop the movement of the spindle.

The shaft B is extended through the left-hand side of the frame A, outside of which it carries a driving-pulley, *b*. The spindle C and the shaft E also extend beyond that side of the said frame, the former carrying a small pulley, *c*, which drives a larger pulley, *e*, on the end of shaft E, by means of a belt. When the swinging frame F hangs vertically neither of the sectional nuts *f f′* are in contact with the right or left hand screws; but when swung to the right far enough for the lower point of the plate L to pass the top of the slide I, (see Fig. 2,) the sectional nut *f* is thrown into connection with the right-hand screw-thread, which moves the nut, and consequently the frame F and the change-plate L, from left to right. The traverse-rod D is free to move endwise in the frame A, and the frame F is rigidly connected to said rod, and therefore the rod D and its thread-guide *d* are moved to and fro with said frame F. As the plate L is moved forward past the slide I it comes in contact with the bent finger *r′*, which it forces back against the spring *s*, the pressure of which acts to crowd the plate L against the slide I, so as to swing it, with the frame F, across to the other side of the opening in the bracket T, so soon as it passes the angular side of the slide toward which it was moving, thereby disengaging the right-hand screw-thread from the sectional nut *f*, and engaging the left-hand screw-thread with the sectional nut *f′*, for a return-movement of the traverse-rod and its thread-guide, and at the same time the swinging frame, having been moved far enough to the left to bring the plate K into engagement with the teeth of the wheels *h*, causes the plate K, as the frame is moved to the other side of the slide I, to rotate the wheel the distance of one tooth. On the return of the swinging frame toward the right the plate K leaves the wheel, and when the plate L has again passed the slide I the said frame, with its plate K, is swung to the other side of the slide by means of the spring *s* on arm *r*, so that upon the next movement of the plate K toward the left its beveled edge enters between the next two teeth of wheel *h*, and again causes it to move the distance of one tooth. The rotation of the wheel *h* causes the shaft G and its cam *g* to be rotated, thereby raising the slide I so that its top overlaps the plate L more and more at each movement of the wheel *h*, and thus compelling the plate L to travel farther before it can pass it, and consequently making the traverse-rod D and its thread-guide *d* to move a little farther each way. The rotation of the shaft G also gradually rotates the cam *p* with the same speed as the cam *g*. These movements continue until the cam *g* has made a complete revolution, at which time the slide I drops off the toe *n* of the said cam, and the toe of the cam *p* comes in contact with the latch N and forces it out of engagement with the lever, so that the pulley B′ is lowered out of contact with the pulley H, and the brake O′ falls against the latter, when the machine stops. The shaft B is driven by a belt upon its pulley *b*, and runs continually, whether it is raised so that its friction-pulley is in contact with the pulley H of the spindle or not. The operator places a spool upon the right-hand end of the spindle, after having started a thread upon it from a bobbin in some convenient place through the eye in the thread-guide *d*, and lets the thread-guide down upon the spool. He then depresses the long end of lever O by means of the treadle-rod U, until it is caught by the latch N, thereby raising the pulley B′ into contact with the spindle-pulley H, and giving motion to the spindle. Motion is communicated from the small pulley *c* of the spindle to the pulley *e* of the shaft E by means of a belt, (seen in Figs. 1, 2, and 3,) and the motion of the last-named shaft is communicated to the traverse-rod D by means of the sectional nuts and swinging frame, causing it to reciprocate, as above described, the distance of its traverse gradually increasing for each upward movement of the slide I, so that the thread-guide may bring the thread up to the inclined sides of the spool, and the thread shall be evenly laid thereon. These movements are continued through the alternate connection of the sectional nuts with the right and left hand screw-threads, the plate K rotating the wheel *h* the distance of one tooth upon every return until the shaft G, with its cams *g* and *p*, has made a complete revolution, at which time the cam *p* stops the operation, as above explained, the machine having wound twice as many courses of thread upon the spool as there are teeth in the wheel *h*. The full spool is then taken off, an empty one put on, and the operation is begun again.

I claim as new and desire to secure by Letters Patent—

1. In machines for spooling thread, the lever O, constructed and operated substantially as

above described, one arm of which carries one end of the main shaft B, and another is engaged at certain times by a latch, N, as herein shown.

2. The slide I, constructed substantially as shown, in combination with a change-plate, L, substantially as above described.

3. The combination of the cam *g* with the slide I, substantially as above described.

4. The fingers *r r'*, in combination with the change-plate L, substantially as above described, the fingers being pressed continually against the plate by a spring, *s*, or other suitable devices.

5. The toothed wheel *h*, in combination with the plate K of the swinging frame, substantially as and for the purpose above described.

6. The shaft G, with its cam *p*, in combination with the lever O and latch N, substantially as and for the purpose above described.

7. Actuating the brake O' and bringing it against the pulley of the spindle at the instant of the disengagement of the latch N from the lever O, substantially as and for the purpose above described.

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Witnesses:

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