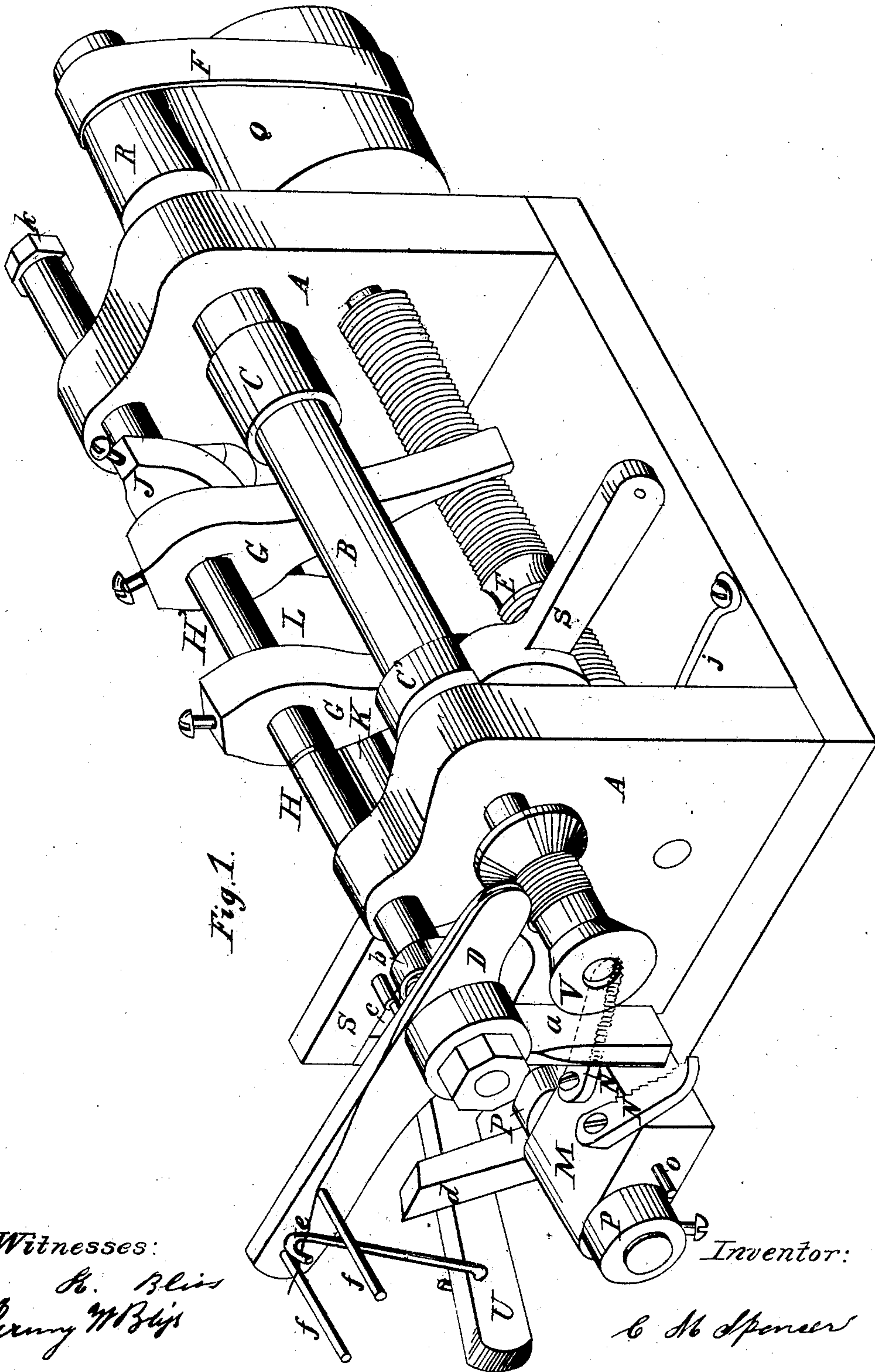


C. M. SPENCER.
MACHINE FOR SPOOLING THREAD.

No. 27,012.

Patented Jan. 31, 1860.



Witnesses:
H. Bliss
J. W. Bliss

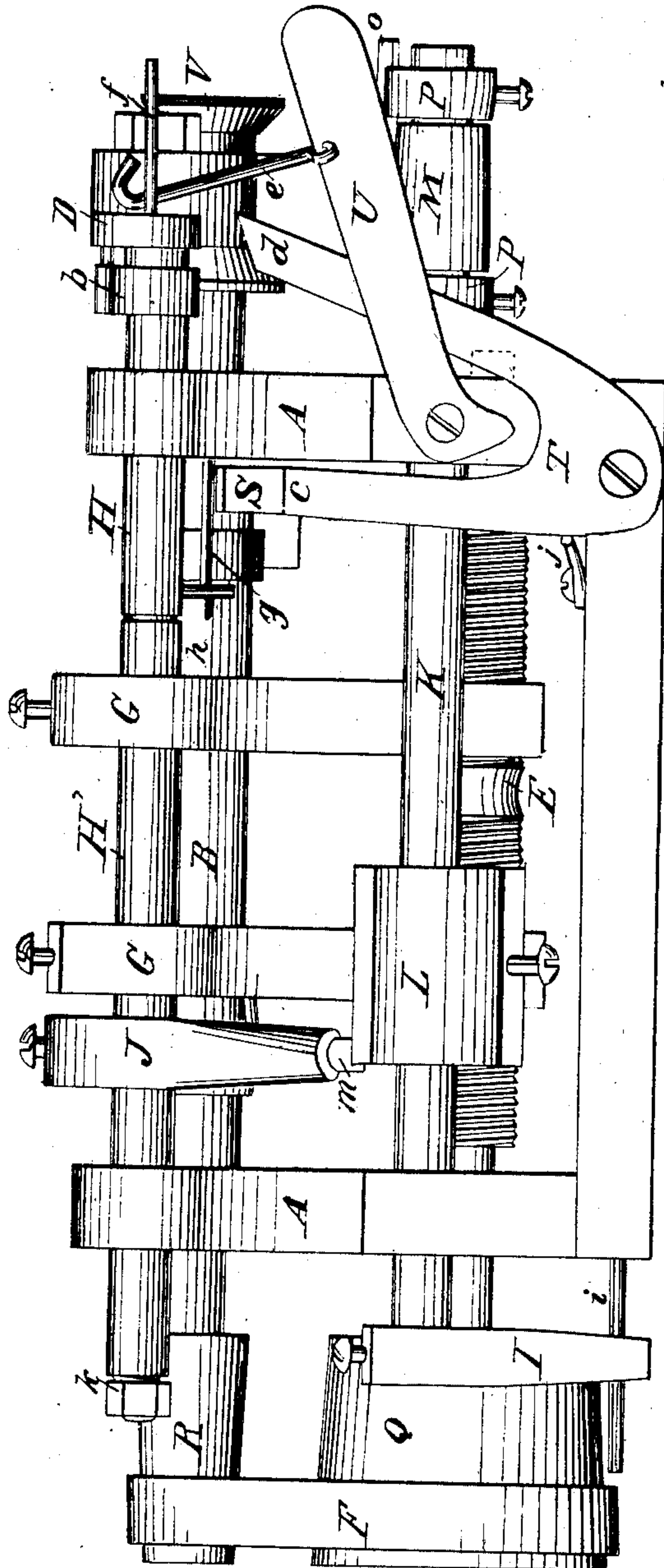
Inventor:
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Fig. 2.



Witnesses:

R. B. B. B.
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UNITED STATES PATENT OFFICE.

C. M. SPENCER, OF MANCHESTER, CONNECTICUT.

MACHINE FOR SPOOLING THREAD.

Specification of Letters Patent No. 27,012, dated January 31, 1860.

To all whom it may concern:

Be it known that I, C. M. SPENCER, of Manchester, county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Machines for Spooling Thread; and I do hereby declare that the same is described and represented in the following specification and drawings, and to enable others skilled in the art to make and use my improvements I will proceed to describe the construction and operation, referring to the drawings, in which the same letters indicate like parts in each of the figures.

The machines heretofore used for winding thread on spools were provided with a shaft to carry the spool, and a thread guide carried by a traverse rod with half nuts alternately applied to a right and left screw to operate the traverse rod, so as to wind the thread on the spool regularly from end to end in successive layers, the half nuts being changed by hand.

To make the machine automatic or self-operating is the object of my improvements; which consist in an arm connected to the thread guide, so as to be traversed and vibrated by it, so as to operate certain other devices, to change the half nuts at the proper time to reverse the motion of the thread guide.

Figure 1, is a perspective view of the machine with my improvements. Fig. 2 is an elevation of one side.

In the accompanying drawings A, A', are the ends of a cast iron stand or frame, one or both of which may be fastened to the base A², with screws or otherwise. These stands are perforated for the journals of the shafts, and other working parts of the machine, which pass through them.

B, is a shaft fitted to turn in the ends A, and is provided with a pulley C, for the band which is to operate the machine. One end of the shaft B, is fitted to receive the spool *v*, so as to turn with the shaft, and be easily and readily removed and applied; and the opposite end of the shaft is provided with a conical pulley R, to carry the belt F, and turn the pulley Q, and right and left screw E, which is arranged to turn in the ends A, as shown in the drawing. The pulleys Q, and R, are made conical so that the motion of the screw may be varied to suit the size of the thread being wound.

H, is the traverse rod which extends

through the tube H', which turns freely on it and is compelled to traverse with the rod by the nut *h*, on the end of the rod. Both the rod H, and tube H' traverse freely in the ends A, A', and carry the thread guide D, and arm *a*, which are fastened together, and both are made in the form shown in the drawing and fitted to turn or vibrate freely on the rod H, which is prevented from turning by the pin *h*, which traverses against the pin *g*, in the end A, and the coiled spring *b*, is fastened to the rod H, and acts on a pin in the thread guide D, to press the end of the guide against the thread being wound on the spool *v*. To traverse the rod and thread guide, the arms G, G, are fastened to the tube H', with half nuts near their ends fitted to the right and left screw E, so that as the half nuts are alternately brought against, and released from the screw the rod and guide are traversed alternately in each direction to wind the thread on the spool *v*. To rock the tube H' and change the half nuts the arm J, is applied to the tube, which arm has a slide *m*, fitted to it and acted upon by a spiral spring shown in Fig. 2, which presses it out against the changing or vibrating block L, on the shaft K, which is fitted to turn and traverse in the ends A, A', the end of the slide *m*, and the edge of the block L, are both V-shaped, and the power of the spring on the slide is sufficient to press it, the slide *m*, out, after the block L, is vibrated (as will be hereafter described,) so that when the edge of the block passes the edge of the slide *m*, the spring on the slide forces it out and pushes it down the inclined side of the block L, so as to turn the tube H', and throw one of the half nuts out and the other in to the screw, and thus change the motion of the traverse rod. And as the layer of thread approaches the head of the spool, the arm *a*, strikes one of the arms N, and traverses the shaft K, so as to vibrate the block L, in the opposite direction and carry its edge by the end of the slide *m*, pressing it into the arm J, until the edge of the block passes the edge of the slide, when the spring forces the slide out as before mentioned, and changes the half nuts to reverse the motion of the transverse rod.

To operate the shaft K, and vibrate the block L, at the proper time to change the nuts the block M, is placed on the shaft so that the shaft will turn freely in it while

the block traverses the shaft, by acting against the collars P, P, fastened to the shaft K, as shown in the drawing. The pin *o*, is fastened in the end A, and extends 5 through the block M, to prevent it from turning but allows it to traverse. The arms N, N, are fastened to the block M, so that they may be adjusted to such an angle as will suit or correspond with the heads of 10 the spools used, and they are acted on by the arm *a*, on the traverse rod H, so as to traverse the block M, and shaft K; and to give this shaft a rolling motion the arm I, is fastened to it and its lower end is fitted 15 to traverse on pin *i*, fastened in the base A², at an angle of about forty-five degrees with the end of the base, so that as the shaft K, is traversed it is rolled or rocked to vibrate the block L, and change the half nuts as 20 heretofore described.

To increase the length of traverse of the thread guide and adapt it to the angles of the head of the spool *v*, as it is filled with thread, the arms N, N, are arranged at an 25 angle to each other as shown in the drawing, and the arm *a*, which acts on the arms N, N, is fastened to the thread guide D, so that as the spool fills with thread it raises the guide, and gradually carries the arm *a*, 30 out into the gradually widening space between the arms N, N, so as to increase the length of each successive layer of thread on the spool, and adapt it to the angles of the heads of the spool, so as to fill it uniformly 35 from end to end until it is full of thread.

To stop the machine when the spool is full of thread the pulley C', is fastened to the shaft B, and the brake lever S, is arranged to vibrate on a pin in the end A, so 40 as to act on the pulley C', when the left hand end of the lever is dropped which is held up by the arm *c*, of lever T, which lever vibrates on a screw in the base A², and has an arm *d*, which extends up under the 45 thread guide, so that when the spool is full, the thread lifts one end of the thread guide and depresses the other, so that it strikes the end of the arm *d*, and carries the arm *c*, out from under the brake S, so that it falls 50 and applies friction to the pulley C' and stops the machine; and a wire may be connected to the brake S, so as to release a clutch or change a band from a fast to a loose pulley at the same time the brake is 55 applied to the pulley C', and so that when the brake is released the clutch or band may be changed back again to operate the machine. When the brake S is raised to re-

lease the pulley the spring *j*, fastened to the base A², throws the arm *c*, under the brake 60 to hold it up.

To stop the machine when the thread breaks or runs out before the spool is filled with thread, the thread as it runs onto the thread guide is drawn across the pins *f*, *f*, 65 in the guide and under the hook *e*, from the lever *u*, which lever *u*, vibrates on a screw in the end A. Now so long as the thread is drawn across the pins under the hook *e*, it holds up the lever *u*, but when the 70 thread breaks or runs out, it releases the hook and the lever falls, so that the opposite end strikes the arm *c*, and pushes it from under brake S, so as to let it fall and stop the machine until the thread is mended or 75 pieced up, and the machine started again. In order to allow the spool to make one or more turns at each end of each successive layer of thread the journals of the screw E, are turned a little longer than the thickness 80 of the ends in which it turns, so as to allow the screw a little end play, so that it may turn and traverse itself before it begins to traverse the half nuts, after they are brought against it. The same thing may be effected 85 by giving the tube H', a little end play on the traverse rod H.

I believe I have described and represented my improvements which make the machine automatic or self acting so as to enable any 90 person skilled in the art to make and use them I will now state what I desire to secure by Letters Patent, to wit:

I am aware that machines have long been in use for winding thread with a shaft to 95 carry the spool—a traverse rod to carry the thread guide operated by a right and left hand screw; with half nuts alternately in gear with said screw and changed by hand; therefore I make no claim to these 100 devices except in combination with the devices which I have applied to make the machine automatic or self operating.

1. I claim the arm *a*, in combination with the arms N, N, shaft K, arm I and inclined 105 plane or pin *i*, for the purpose of operating the block L, so as to change the motion of the traverse rod as described.

2. I claim the arm J, provided with a slide *m*, constructed so as to operate sub- 110 stantially as described, in combination with the block L, for the purposes set forth.

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Witnesses:

R. BLISS,
JEREMY W. BLISS.