

(No Model.)

J. E. TYNAN.

MACHINE FOR DOUBLING AND WINDING SILK, &c.

Patented Jan. 18, 1887.

No. 356,216.

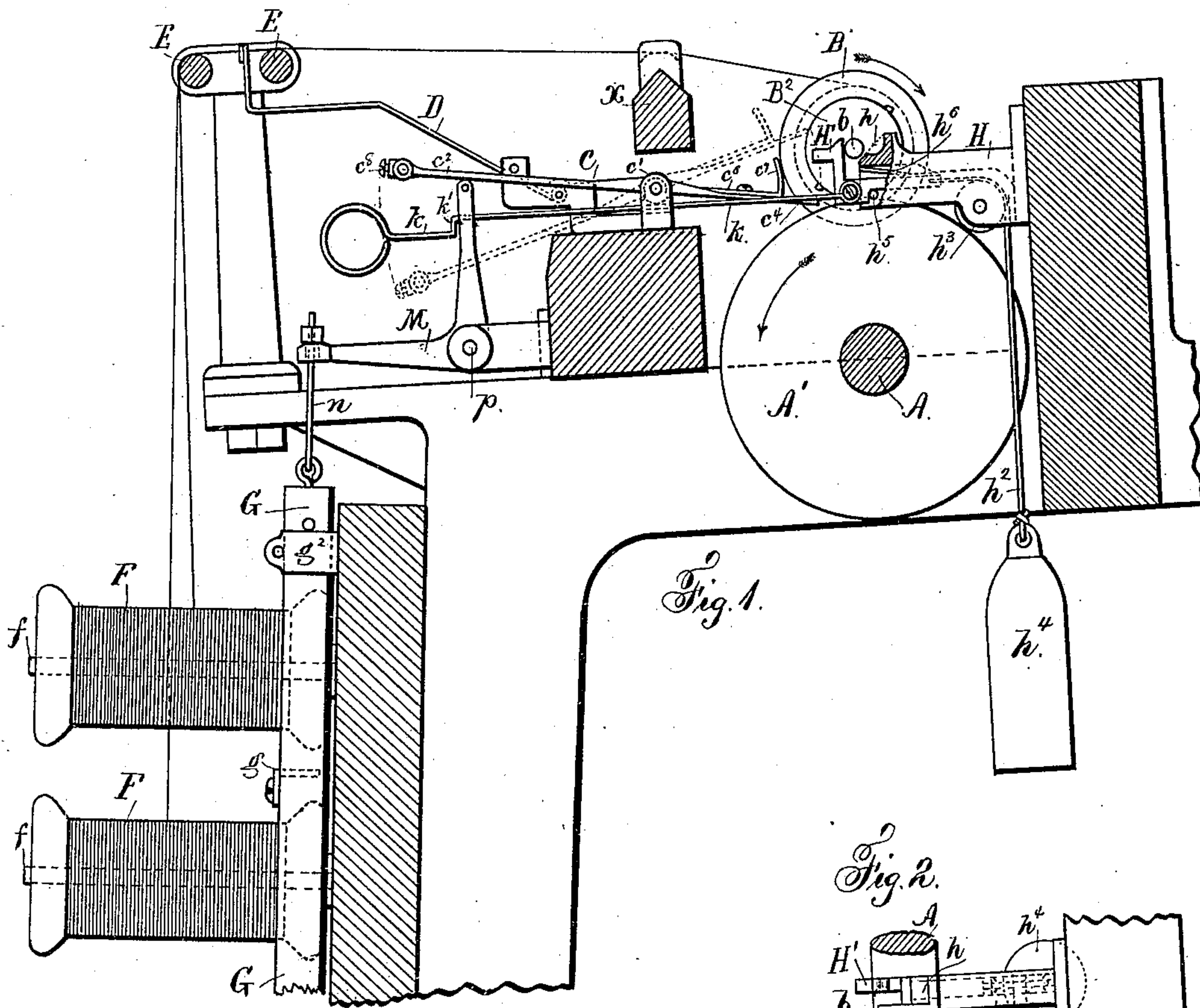


Fig. 1.

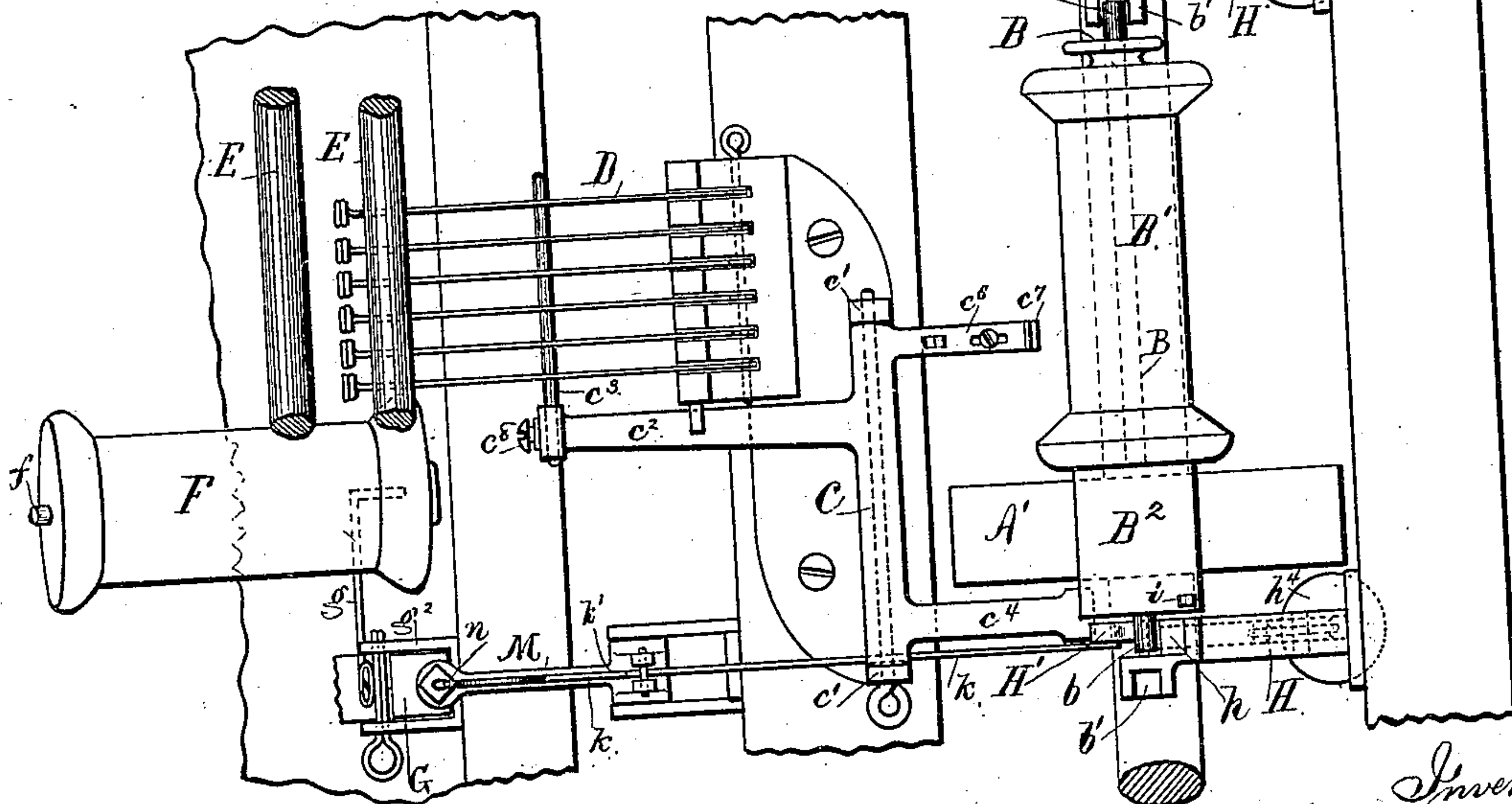


Fig. 2.

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Joseph E. Tynan
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(No Model.)

2 Sheets—Sheet 2.

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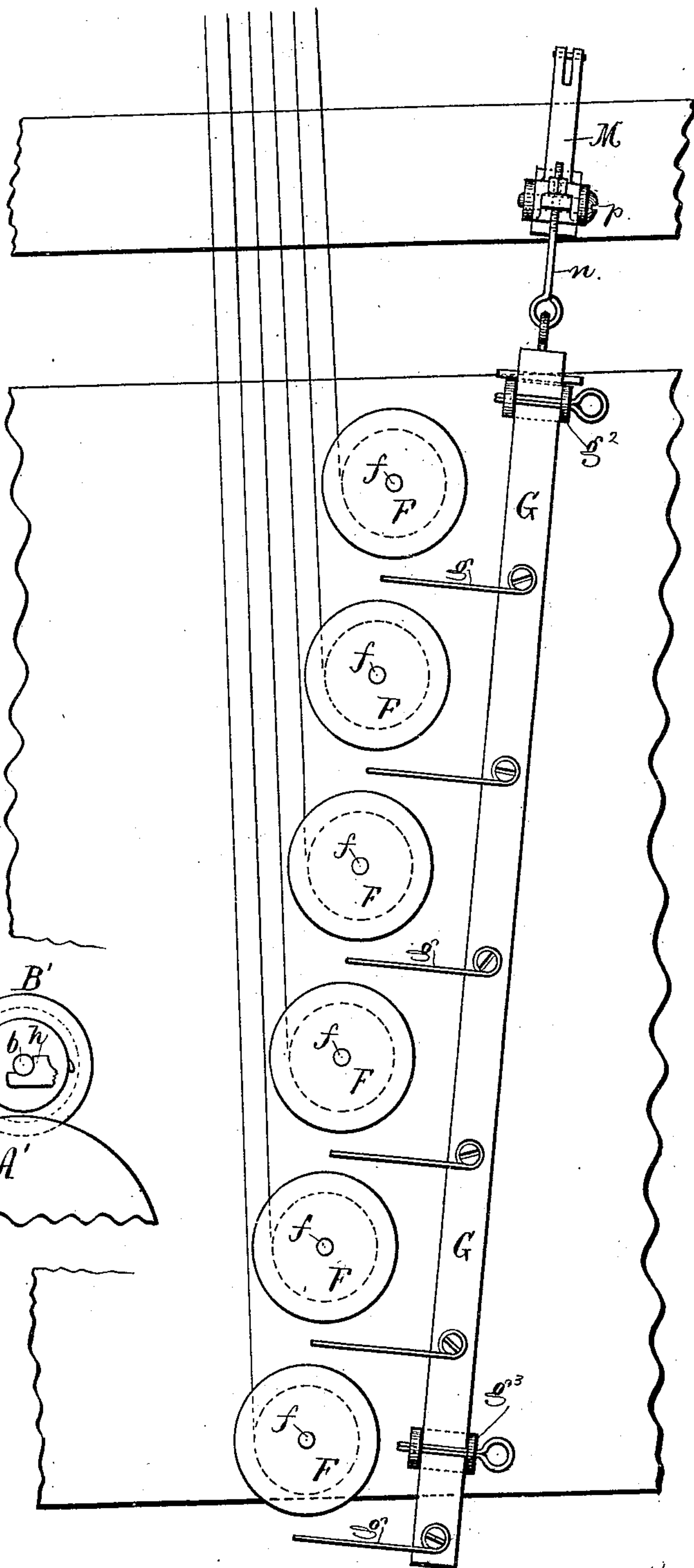
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Fig. 3.

Fig. 4.



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UNITED STATES PATENT OFFICE.

JOSEPH E. TYNAN, OF PATERSON, NEW JERSEY.

MACHINE FOR DOUBLING AND WINDING SILK, &c.

SPECIFICATION forming part of Letters Patent No. 356,216, dated January 18, 1887.

Application filed March 5, 1885. Serial No. 157,756. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH E. TYNAN, of Paterson, in the county of Passaic and State of New Jersey, have invented an Improve-
5 ment in Machines for Doubling and Winding Silk and other Threads, of which the following is a specification.

This invention is made for stopping the winding-spool and separating the same from
10 the driving-drum when the thread breaks or the spool becomes full, so that such spool may be freely revolved by hand in winding up any slack thread previous to starting the machine; also, for stopping the creel spools or bobbins
15 by a frictional brake, so that the threads will not unwind by the momentum of the spools after the winding mechanism has been stopped upon the breaking of a thread, and, also, for liberating the friction-brake from the creel-
20 bobbins previous to starting the machine, so that said creel-bobbins can easily be turned by hand in adjusting the threads previous to starting the machine.

In the drawings, Figure 1 is a vertical section representing the features of improvement
25 made by me upon the doubling and winding machine. Fig. 2 is a plan representing one section of the doubling and winding machine. Fig. 3 is an elevation of the friction-brake and
30 a portion of the creel and bobbins. Fig. 4 is a detached view of the winding-spool in the position it assumes when the winding is stopped, the journal of the spool being shown in the notched bearing, a part of the driving-drum
35 and stop-lever also being shown.

The creel-bobbins F are preferably arranged in the manner shown in Fig. 3, the creel-pins
f not being directly under each other, but forming an inclined range, so that the threads
40 pass off nearly vertically from the bobbins, and over the guide-bars E, through the eyes at the ends of the faller-wires D, to the spool B'. The threads are usually gathered together at an eye or notch upon a traverse-rod of ordi-
45 nary construction. The location of this is represented at X, Fig. 1. The spool B' is upon a spindle, B, one end of which is made as a pulley, B², in contact with and driven by the drum A' upon the main shaft A. This main
50 shaft A, drum A', spindle B, and spool B' are

of ordinary construction, except as herein-
after indicated, and the extreme ends of the spindle B are made as journals b. The journal at one end revolves in a notched bearing, b', and the journal at the other end, adjacent
55 to the pulley B², revolves in a two-part spindle-guide, (next described,) which is so constructed that in its normal position the pulley B² will rest upon the driving-drum A'; but when the stop-motion is brought into action
60 the spindle will be elevated sufficiently to separate the pulley B² from the driving-drum A', and thereby stop the rotation of the spool; but the spool is free and can be rotated by hand,
65 as heretofore stated.

The spindle-guide is formed in two parts, the part H being in the form of a stationary arm or bracket, with a notch or jaw, h, at the end thereof for the journal b. The part H' of the spindle-guide is L-shaped, the horizontal
70 portion sliding in guides in the arm H, and to the end thereof is attached a cord, h², which passes over a pulley, h³, to a weight, h⁴. The action of this weight, or a spring which might be substituted for the same, is to draw the part
75 H' of the spindle-guide toward the jaw h; but this movement is prevented by the stationary pin h⁵, that projects from the arm H and engages a hook or latch upon the lower part, H',
80 of the spindle-guide.

When the winding operation is in progress, the journal b of the spool is sustained between the end of the-jaw h and the side of the part H' of the spindle-guide, as seen in Fig. 1. If, now, the portion H' of the two-part spindle-
85 guide is lifted so as to unhook it from the pin h⁵, such part H' of the spindle-guide is drawn back by the weight h⁴, and in so doing the journal b of the spindle B is forced back into the jaw h and held in that position within the
90 two-part spindle-guide. The spool is now stopped by the pulley B² being lifted off the drum A'; but the spool is free to be revolved by hand. When the part H' of the spindle-guide is drawn forward by the rod K, that is
95 pivoted to it, the spring h⁶ throws the hook of the said spindle-guide down upon the pin h⁵, and the parts are restored to their normal position for the spool B' to be rotated by power.

The surface of the jaw h may be curved, as 100

shown by the full lines, for the journal *b* to rest upon the same; or the surface may be an inclined plane, as indicated by dotted lines. With the inclined surface the spindle-journal

5 will slide down the jaw *h* to its normal position when the rod *K* is drawn forward; but with the rounded surface to the jaw the spool may be moved forward by hand.

I make use of a suitable stop-motion lever 10 to stop the rotation of the spindle and spool if the thread breaks or the spool becomes full. I have shown and prefer the balance stop-lever *C* as pivoted upon the bearing *c'*, and having one arm, *c''*, extending out at one side and provided with a rod, *c'''*, beneath the faller-wires *D*; and there is another arm, *c'*, the end of which is adjacent to the spindle-guide; and there are pins or projections *i* upon the pulley *B'* of the spindle *B*. If, now, a thread 20 breaks, one of the fallers *D* will drop, and the balanced stop-lever *C* is moved thereby, and the end of the arm *c'* swung up into the path of one of the pins *i*, which, coming in contact with such arms *c'*, causes the balanced stop-lever to be moved into the position indicated by dotted lines in Fig. 1, and the pulley and its journal are pushed back by the end of the arm *c'* coming against the face of the pulley as the parts move, and in its movement the 30 end of the arm *c'* acts beneath the projecting end of the part *H'* of the spindle-guide, lifting and unlatching the same, and causing the journal *b* of the spool to be carried back into the jaw *h*, as before described.

35 If the pins *i* are at the end of the pulley *B'*, they will act in the manner before described, in which case the end of the arm *c'* will not require to be as wide as shown in Fig. 2.

When the stop-lever *C* is in the position 40 shown by dotted lines, Fig. 1, the end thereof will not be in the path of the pins *i*, because the journal *b* and the pulley *B'* have been carried bodily back, so that the journal *b* is in the jaw *h*; hence the spool is free to be re- 45 volved by hand in either direction.

Upon the balance stop-lever *C* is another arm, *c''*, having a feeling-finger, *c'''*, opposite to the middle portion of the spool *B'*; hence when the spool becomes sufficiently full the thread 50 thereof will rub against this feeling-finger and swing the stop-lever and stop the rotation of the spool, as before mentioned. The feeling-finger at the end of the arm *c''* is preferably in the form of an L-shaped plate, *c'''*, slotted 55 and held by a screw to the arm *c''*, so as to allow for the spool being wound with the desired amount of thread before coming into contact with the feeling-finger.

The rod or wire *c'''* is held into the end of the 60 arm *c''* by a clamping-screw, *c''''*, to provide for taking out this wire *c'''*, and allowing one or more of the faller-wires *D* to hang down out of the way when they are not all in use.

The friction-bar *G* is guided in the supports 65 *g'' g'''*, and the friction-springs *g* extend out as arms that are adjacent to the back ends of the creel spools or bobbins *F*, so that when the

friction-bar *G* is raised such springs *g* will come in contact with and stop the rotation of all the creel-bobbins. 70

At the upper end of the friction-bar *G* is a link, *n*, connecting such friction-bar *G* to one arm of the bent lever *M*. This lever *M* is pivoted at *p*, and the upper end of such bent lever is adjacent to the rod *k* and forked for such 75 rod to pass through the fork, and there is a latch or downward projection, *k'*, upon this rod *k*, coming in front of the arm of this bent lever *M*; hence, when the balanced stop-lever is brought into action, as before described, to 80 lift the latched part *H'* of the spindle-guide off the stationary pin *h''*, the weight *h'''*, in drawing back such latched part *H'*, also pulls upon the rod *k*, and by its latch or projection *k'* moves the bent lever *M* and draws up the friction-bar *G*, bringing the friction-springs *g* into 85 contact with the creel-bobbins *F*, stopping their rotation. After the machine has been stopped, as aforesaid, the attendant first lifts the rod *k*, unlatching it from the bent lever *M* 90 and liberating the creel-bobbins *F* from the friction-springs *g*, so that they may be freely turned by hand in adjusting the thread or repairing any broken thread. This is done without starting the winding mechanism, and when 95 the parts are all ready the attendant starts the winding by pulling the rod *k*, as before described, and the latch or projection *k'* will drop into its normal position in front of the bent lever *M*, and the spool and journal are 100 moved by hand out of the jaw *h* in cases where they do not slide or roll down to place by gravity.

By my aforesaid improvements I obtain great facility in stopping the winding-spool and the 105 creel-bobbins simultaneously and in the adjustment and repair of the threads, because the creel-bobbins are liberated independently of the starting mechanism, and the winding-spool is freed by the act of stopping the same. 110

The balanced stop-lever swings into its normal position as soon as the faller is raised and the thread repaired and parts resume their normal position, and the winding is resumed by pulling upon the rod *k* and moving the 115 spool by hand, if necessary.

It will be evident that when the end of the arm *c'* comes into contact with one of the pins *i* the inertia of the rotating spool causes the end of the arm to swing, and at the same time 120 such arm thrusts the spindle of the spool backwardly, lifting the journal *b* into the jaw *h* and stopping the rotation of the spool. This operation is performed independent of any movement of the part *H'* of the spindle-guide, and 125 in starting the spool it is only necessary to roll the journal *b* of the same out of the jaw *h* back into the normal position shown in Fig. 1; hence it is not always necessary, so far as this part of my invention is concerned, to make the part 130 *H'* of the two-part spindle-guide move.

I claim as my invention—

1. The combination, with the spindle for the spool, and the pulley *B'*, having pins *i*, and the

driving-drum A', of the two-part spindle-guide, one part of which is made with the jaw *h* and the other part with a latch, the pin *h*⁵, and weight *h*⁴, cord *h*², and a balanced stop-lever, substantially as set forth.

2. The combination, with the creel-pins *f* for the bobbins F, of the friction-bar G, friction-springs *g*, the balanced stop-lever, faller-wires, and mechanism, substantially as specified, intermediate of said stop-lever and friction-bar, whereby the stop-lever is caused to bring into action the friction bar and springs on the breakage of a thread, substantially as set forth.

3. The combination, with the spindle and its pulley and pins, and the stop-lever C and faller-wires D, of the two-part spindle-guide having a latch formed upon one portion, that latches upon the other portion, the rod *k*, connected to the moving part of said spindle-guide, the cord and weight, or its equivalent, the lever M and friction-bar G, and the friction-springs *g*, substantially as set forth.

4. The combination, with the winding-spindle and its pulley and driving-drum, of the two-part spindle-guide, one part of which has a jaw, *h*, and the other a latch, the pin *h*⁵, cord *h*², and weight *h*⁴, the balance stop-lever C, faller-wires, and the pins *i*, substantially as specified.

5. The combination, with the faller-wires, of the stop-lever C, having an arm, *c*⁶, and a feeling-finger at the end of said arm, adjacent to the winding-spool, substantially as set forth.

6. The combination, with the driving-drum A', the faller-wires, and stop-lever provided with an arm, *c*⁴, of a pulley and spindle having journals, a spindle-guide having a jaw, *h*, and pins on the pulley of the spindle to act against the stop-lever arm *c*⁴ and move the journal of the spindle up into the jaw *h* and separate the pulley from the drum A', substantially as specified.

7. The combination, with the driving-drum A', the faller-wires, and stop-lever provided

with an arm, *c*⁴, of a pulley and spindle having journals, a spindle-guide having a jaw, *h*, and pins on the pulley of the spindle to act against the stop-lever arm *c*⁴ and move the journal of the spindle up into the jaw *h* and separate the pulley from the drum A', and the part H' of the spindle-guide to hold the journal upon said jaw *h*, and mechanism for moving said jaw, substantially as specified.

8. The combination of creel-pins for the bobbins, friction-springs, and the bar that supports the same for arresting the rotation of the bobbins, a winding spindle and pulley, and its driving-drum, a two-part spindle-guide for the journal of the spindle, and a latch and connections, substantially as specified, between the moving portion of the spindle-guide and the bar carrying the friction-springs for the creel-bobbins, whereby the friction device of the creel-bobbins can be unlatched previous to starting the winding mechanism, substantially as set forth.

9. The combination, with the faller-wires and the stop-lever having an arm, *c*⁴, and the spindle having a pulley and pins, of a spindle-guide having a jaw, *h*, for the journal at one end of the spindle, whereby the stop-lever arm acts directly to move the spindle and the journal back into such jaw *h* and stop the rotation of the spindle, substantially as specified.

10. The combination, with the winding-spindle provided with the pulley B² and pins *i*, the driving-drum, creel-pins, friction-bar, and springs, of the faller-wires, the stop-lever C, the two-part spindle-guide provided with a latch upon the moving part H', the cord *h*², and weight *h*⁴, or their equivalents, and the intermediate connections between the part H' and the friction-bar, substantially as described.

Signed by me this 27th day of February, A. D. 1885.

JOSEPH E. TYNAN.

Witnesses:

GEO. T. PINCKNEY,
WILLIAM G. MOTT.