

(No Model.)

J. W. FOSTER.

STOP MOTION FOR SPOOLING MACHINES.

No. 335,572.

Patented Feb. 9, 1886.

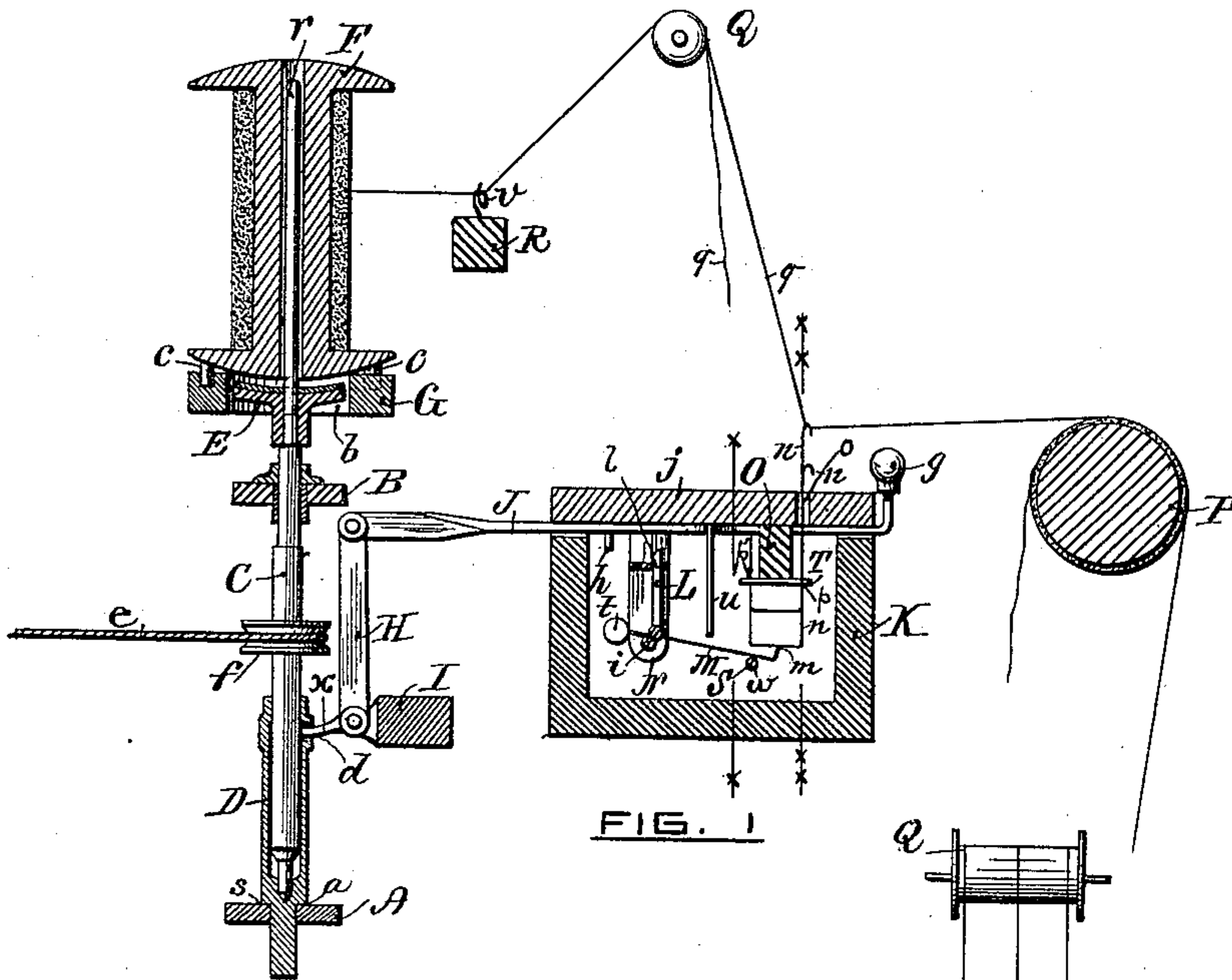


FIG. 1

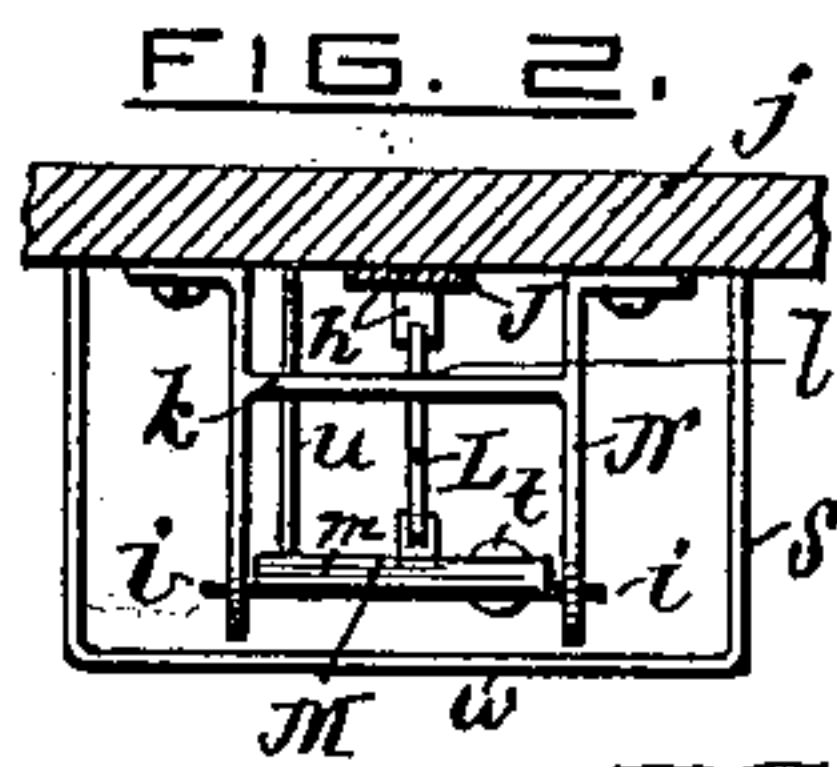


FIG. 2.

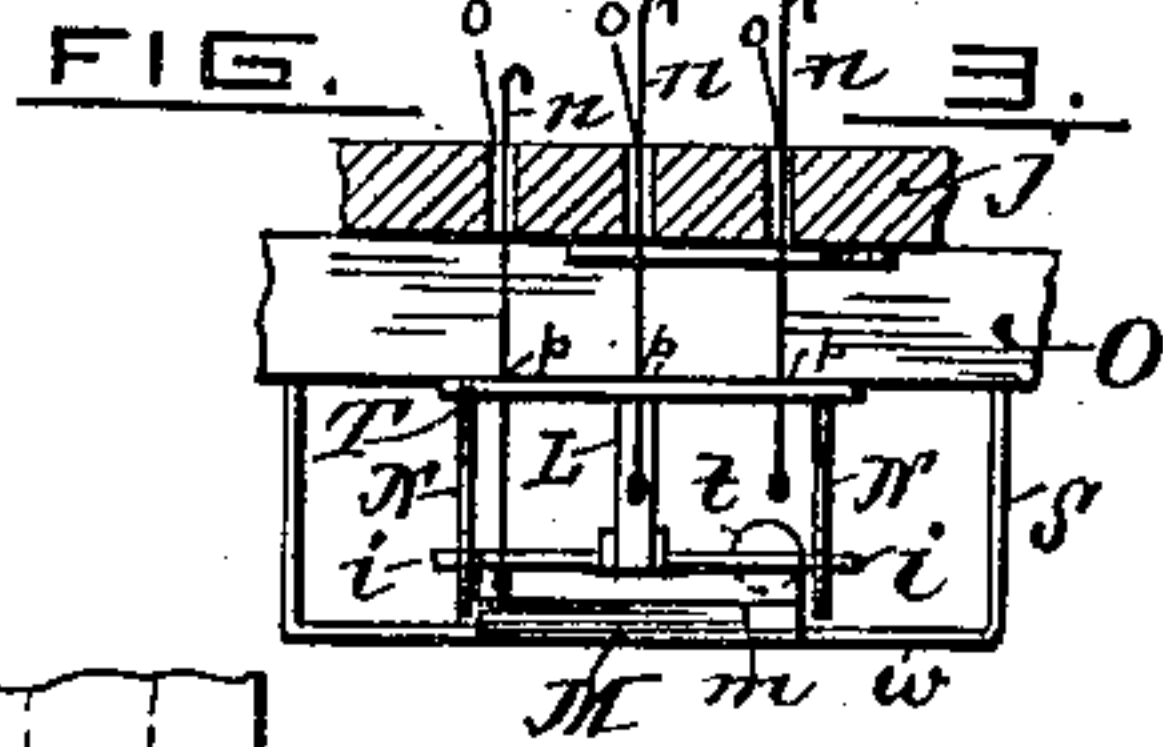


FIG. 3.

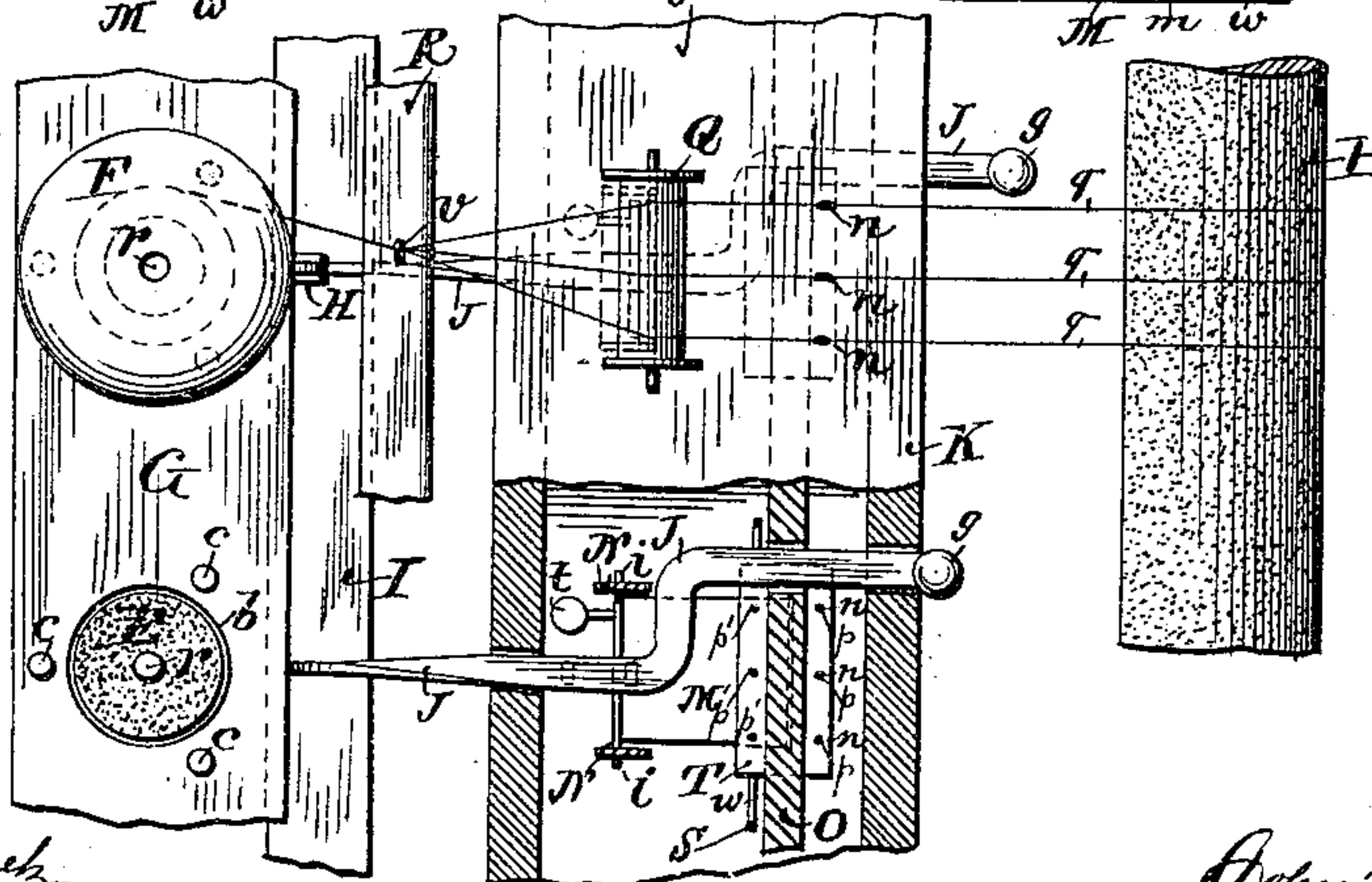


FIG. 4.

WITNESSES:

Chas. F. Schuch
John D. Lynch

INVENTOR:

John W. Foster
per S. Scholfield
attorney

UNITED STATES PATENT OFFICE.

JOHN W. FOSTER, OF CENTRAL FALLS, ASSIGNOR TO HIMSELF AND JOHN T. WILLMARTH, OF PAWTUCKET, RHODE ISLAND.

STOP-MOTION FOR SPOOLING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 335,572, dated February 9, 1886.

Application filed April 22, 1885. Serial No. 163,074. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. FOSTER, of Central Falls, in the county of Providence, in the State of Rhode Island, have invented an
5 Improvement in Stop-Motions for Spooling-Machines, of which the following is a specification.

The nature of my invention consists in the combination of a vertically-movable revolving
10 spindle with means for stopping the revolving movement of the spool upon the falling movement of the spindle, means for holding the spindle in engagement with the spool for the purpose of rotating the same, and means
15 for causing the downward movement of the spindle and consequent stoppage of the spool upon the breaking of a single thread, as hereinafter set forth.

Figure 1 is a vertical section of part of a
20 spooler, showing the parts attached to the spindle, and also the box employed to conceal the locking mechanism operated upon by the drop-wire. Fig. 2 represents a vertical section of the top of the lock-concealing box,
25 taken in the line *xx* of Fig. 1, and shows a partial front elevation of the locking mechanism when in its locked position, the drop-wires being omitted. Fig. 3 represents a vertical section of the lock-concealing box, taken
30 in the line of the drop-wire hooks, showing a front elevation of the locking mechanism in its disengaging position. Fig. 4 is a detail plan view illustrating the relative position of the several parts.

In the accompanying drawings, A is the
35 step-rail of the spooler; B, the bolster-rail, and C the spindle, which is held at its lower end in an elongated step, D, which below the exterior shoulder, *s*, loosely fits the perforation *a*
40 in the step-rail A. The upper portion of the spindle is provided with an attached disk or frictional spool-carrier, E, adapted to impart rotary movement to the spool F, which is loosely held upon the stem *r* of the spindle.
45 Above the bolster-rail B, and extending longitudinally of the machine, is placed the spool-rest rail G, provided with circular perforations *b*, of slightly larger diameter than that of the disk or spool-carrier E, and around the
50 upper edge of the perforations *b* are inserted the rubber friction-plugs *c c c*, which serve to

stop the rotary movement of the spool upon the instant of the breaking of any one of the several threads which are being wound thereon.

The elongated step D is provided at its front
55 side with a perforation, *d*, adapted to receive the end of the short arm X of the bell-crank lever H, which is pivoted to a bar, I, said bar being made to extend the whole length of the machine.
60

The spindle C is rotated by means of the band *e* and the attached whirl *f*, and an outward movement of the upright arm of the bell-crank lever H will cause the step D and spindle C to be correspondingly raised until
65 the spool-carrier E strikes against the lower head of the spool, and thereafter, upon the continued outward movement of the bell-crank lever H, and the consequent further elevation of the spindle, the spool F will be raised from
70 its seat upon the rubber friction-plugs *c*, and will then partake of the rotary movement of the spindles and spool-carrier.

To the upper end of the bell-crank lever H is jointed the bar J, which extends through
75 the upper portion of the box K and terminates in a knob, *g*, the bar J being made capable of a limited outward movement, which serves to impart a corresponding outward movement to the upper end of the bell-crank lever, and a
80 consequent upward movement to the spindle. To the under side of the bar J is secured the catch-pin *h*, which by proper engagement with the vertically-moving bolt L of the locking mechanism will serve to hold the spindle at
85 its proper elevation for rotating the spool in order to wind the thread thereon. The bolt L is pivoted to the upper side of the tilting pan M, which is supported by means of the pivot-wires *ii*, loosely held within correspond-
90 ing perforations in the hanger N, which is secured to the under side of the cover *j* of the box K. The hanger N is provided with a cross-bar, *l*, having a perforation, *l*, adapted to guide the upper end of the bolt L, which is
95 so pivoted to the pan M at such a point relatively to the pivot-wires that a rising or falling movement imparted to the outer end of the pan M will cause the corresponding upward and downward movement of the bolt L,
100 but in a diminished degree. The upper end of the bolt L is beveled, so that upon draw-

ing back the bar J the catch-pin *h* will be automatically caught and held by the bolt.

The pan M may be made of light sheet metal, the outer edge, *m*, being turned upward in order to adapt the same for the impact of the drop-wires *n n n*, which are suitably held from displacement by means of a perforated plate, T, secured to the under side of a bar, O, which is attached to the under side of the cover *j* of the box K. The drop-wires *n n n* pass through the perforations *o o o* in the cover *j*, and also through the perforations *p p p* and *p' p' p'* in the plate T, the upper end of the wire *n* being made in hook form, so as to hold the thread, and the lower end of the wire being turned first horizontally and then vertically, so as to pass loosely through the perforations in the plate T, in order that upon the breaking of one of the threads *q* the drop-wire pertaining to that thread will fall freely to the upwardly-turned edge of the pan M.

The pan M is balanced by means of the weight *t*, so that when free it will rise to a horizontal position against the lower end of the stop-wire *u*, which extends downward from the cover *j*, and when the pan M is in its elevated position the bolt L will be in proper position to engage with the catch-pin *h* upon the outward movement of the bar J, and to retain the same in its outward position until released by the falling of one of the drop-wires *n*, which will cause the downward movement of the pan and bolt, and upon the release of the catch-pin *h* by the falling of the drop wire the spindle C will immediately drop into the position shown in Fig. 1, and thus result in the instant stoppage of the movement of the spool by reason of its contact with the friction-plugs *c*.

The several threads *q* to be wound upon the spool F pass from their respective cops upward over the friction-bar P, thence through the hooks of the drop-wires *n*, thence upward over an elevated roll, Q, supported above the box K, thence through the eye V on the wave-motion bar R, and to the spool F, upon which the several threads are to be wound with uniformity.

The horizontal portion *w* of the wire staple

S, which is secured to the cover *j*, serves as a stop to the continued downward movement of the pan M upon the falling thereon of a drop-wire *n*.

It will of course be understood that a fixed support other than the continuous rail G may be employed to form a checking-rest for the spool upon the downward movement of the spindle, and in that case separate rests for each spool may be attached to the bolster-rail; and other means than that of the plugs *c* may be employed for suddenly checking the revolving movement of the spool when in contact with its rest.

I claim as my invention—

1. The combination of the vertically-movable spindle provided with a spool-holding carrier adapted to impart a rotary movement to the spool upon the proper elevation of the spindle, and the stationary spool-rest adapted to cause the stopping of the rotary movement of the spool upon the proper depression of the spindle at the breaking of a thread, and means for raising the spindle and spool-holding carrier, whereby the spool will be taken from its rest and set in revolution, substantially as described.

2. The combination of the stationary spool-rest, vertically-movable spindle provided with a spool-holding carrier, locking mechanism adapted to hold the spindle and its spool-holding carrier at their highest position, and drop-wires adapted to trip the locking mechanism upon the breaking of a thread, and to cause the fall of the spindle and its spool-holding carrier, substantially as described.

3. The combination of the stationary spool-rest, vertically-movable spindle provided with a spool-holding carrier, movable spindle-step, bell-crank lever engaging with the step, the arm pivoted to the bell-crank lever and provided with a catch, the locking-bolt, tilting pan, stop for the same, and the drop-wires, all arranged and operating substantially as described.

JOHN W. FOSTER.

Witnesses:

JOHN S. LYNCH,
SOCRATES SCHOLFIELD.