(No Model.) 2 Sheets—Sheet 1.

G. W. MALIN.

WIRE SPOOLING MACHINE.

No. 342,702. Patented May 25, 1886.

Fig. 1.

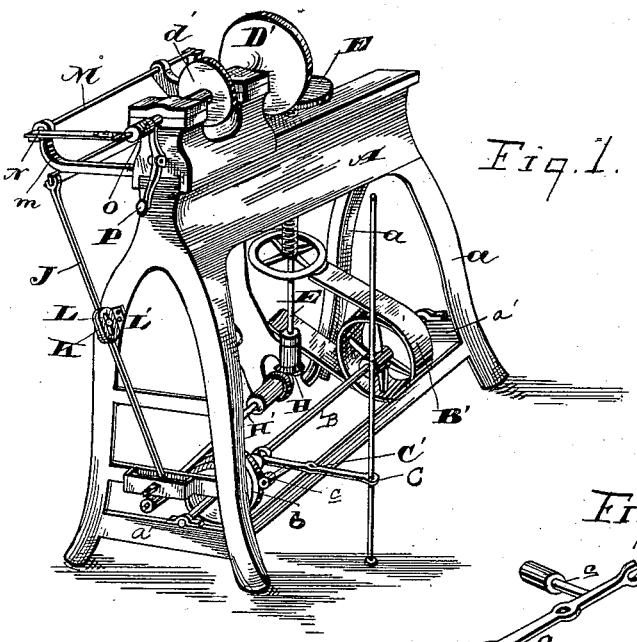


Fig 8.

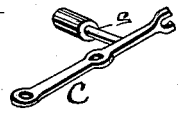
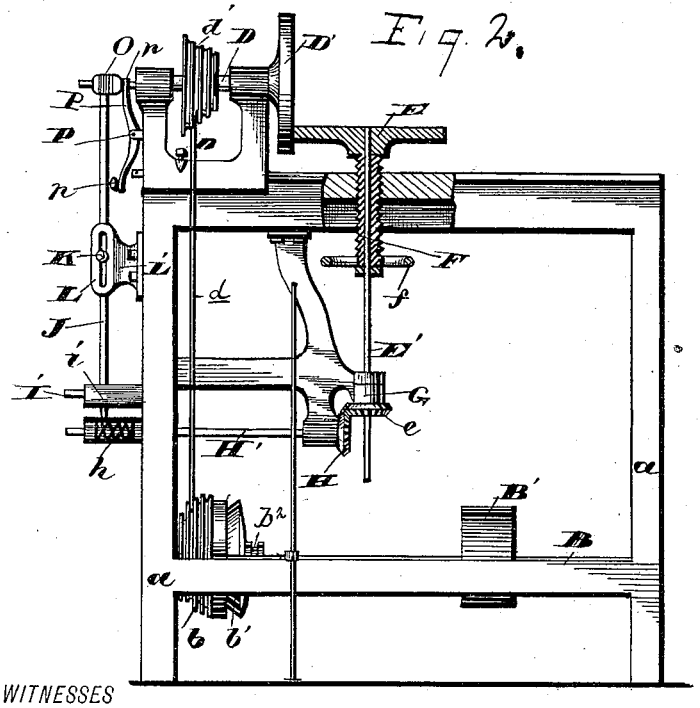


Fig. 2.



WITNESSES

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Geo W King

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

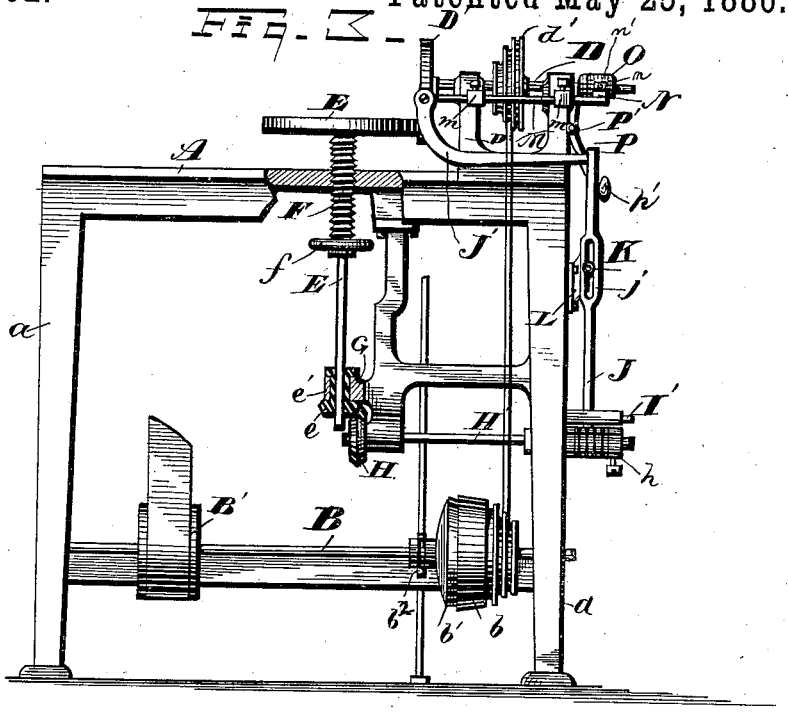

Fig. 4.

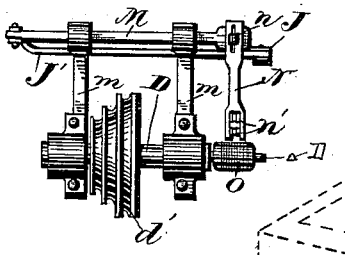

Fig. 5.

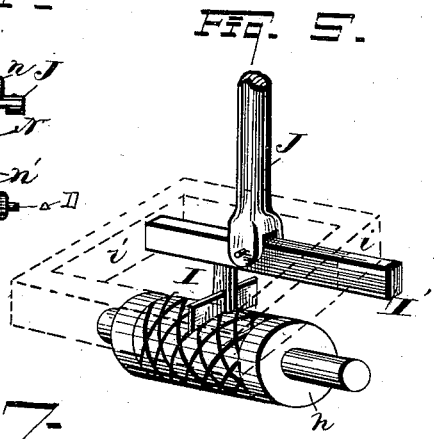

Fig. 6.

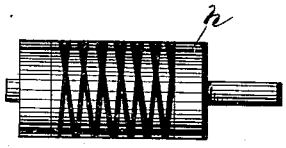

Fig. 10.

Fig. 7.

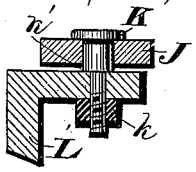

Fig. 9.

WITNESSES

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UNITED STATES PATENT OFFICE.

GEORGE W. MALIN, OF CLEVELAND, OHIO, ASSIGNOR TO THE MALIN & COMPANY, OF SAME PLACE.

WIRE-SPOOLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 342,702, dated May 25, 1886.

Application filed May 9, 1885. Serial No. 164,996. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. MALIN, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Wire-Spooling Machines; 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 pertains to make and use the same.

My invention relates to improvements in machines for spooling wire; and it consists in certain features of construction, and in combinations of parts hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in perspective of my improved wire-spooling machine. Fig. 2 is a front view in elevation, partly in section, of the same. Fig. 3 is a rear view in elevation, partly in section, of the same. Fig. 4 is a plan view of the spindle and upper portion of the feeding device. Fig. 5 is a view in perspective of the lower portion of the feeding device and double screw. Fig. 6 is a plan view of the double-threaded feed-screw. Fig. 7 is a detail showing a transverse section of the feed-lever and fulcrum. Fig. 8 is a view in perspective of the clutch and brake-lever. Fig. 9 is a view of the bolt *n*, showing the hole therein for the passage of the wire; and Fig. 10 is a view in transverse section of the spindle.

A represents the bed-plate, supported on the legs *a*, to which are attached the cross-pieces *a'*, that support the shaft B. This shaft is provided with a driving-pulley, B', and has a cone-pulley, *b*, that is loose on the shaft and forms one portion of a friction-clutch. The male portion *b'* of the clutch has an annular groove, b^2, around the hub, that is engaged by the forked end of the lever C, that is fulcrumed at C', and has a laterally-projecting brake-arm, *c*, that, when the clutch is open, presses on the periphery of the cone *b*. A belt, *d*, passes from the cone *b* to a similar cone, *d'*, on the spindle D. This spindle is provided with the friction-disk D', that engages the disk E, that is mounted on the vertical shaft E'. This shaft passes through the sleeve F, that is threaded, as shown, on the outside, and engages threads in the bed-plate A. This sleeve abuts against the hub of the disk E, and supports the said disk and shaft. The sleeve has a hand-wheel, *f*, by means of which the sleeve may be rotated, and the disk E raised or lowered to give it the required speed by engaging the disk D' near the periphery or toward the center. The shaft E' passes through the gear *e*, which is provided with a spline that engages a groove in the shaft in the usual manner. The gear *e* has an annular groove, *e'*, (see Fig. 3,) that engages the box G, (see Fig. 1,) by means of which the gear is held vertically. This gear engages the gear H, that is mounted on the shaft H', on which at the outer end is mounted the cylinder *h*, that is provided with reverse spiral grooves or threads, right and left, as shown. A point, I, engages the grooves on the cylinder *h*, and gives a uniform reciprocating movement to the attached bar I', that slides through suitable ways in the frame *i*.

J is a lever pivoted, as shown in Fig. 5, to the bar I', and is pivoted also to the rod J' above, and has a slot, *j*, (see Fig. 3,) in which operates the larger end of the stud K, the smaller part of which passes through the slot L in the bracket L'. (See Figs. 1, 2, and 7.) The stud is provided with the nut *k*, by means of which the shoulder *k'* is pressed against the bracket and the stud is held stationary. By loosening this nut the stud K may be moved up or down in the slots *j* and L, so as to change the relative lengths of the lever respectively above and below the fulcrum K. As the throw of the lower end, caused by the said grooves in the cylinder *h*, is positive and always uniform, by changing the fulcrum any necessary change in the throw of the upper end may be had. The connecting-rod J' is pivoted to the sliding bar M, that is supported by arms *m*, extending laterally from the standards D^2, that support the spindle D.

N is an arm secured to the bar M, and has a slot, through which the bolt *n* passes that secures it to the bar, and by means of which the arm N may be adjusted endwise, so that its free end may come close to the spool O on which the wire is wound. The arm N at its free end is provided with a vertical slot, in which are located the two grooved guiding-rollers *n'*. The wire passes through a hole, *u'*, in the head of the bolt *n*, and from thence over

the one roller n' and under the other, by means of which the wire is properly guided onto the spool O. The spools on which the wire is wound are of different sizes, according to the gage of the wire, but have the same sized hole through the center, so that they all fit the overhanging part of the spindle D on which they are placed, and this part is usually made square or triangular in cross section, or, if round, is fluted, or in some manner provided with such sharp corners, ribs, points, or projections as will engage the spool and cause it to revolve with the spindle. The spools are driven onto the spindle quite firmly, and a lever, P, is provided to force the spools off from the spindle after they are wound. This lever is pivoted at P', and is forked at the upper end, and embraces the spindle at p. The lever is bent in a suitable shape, as shown more clearly in Fig. 2, and has a head, p'. A sharp blow delivered on this head will force the spool from its seat on the spindle, so that it may be removed by hand.

The operation of the device is as follows: A coil of wire is placed on an ordinary reel and passed through any suitable tension-regulating device and from thence to the machine. The tension-regulating device and reel are all well-known devices, and are therefore not illustrated in the drawings. The wire as it approaches the machine passes, as aforesaid, through an orifice in the bolt-head n and around the grooved rollers n', as aforesaid, and by this means is carried along by the movements of the arm N, and guided properly upon the spool. The fulcrum K is adjusted so that the stroke of the arm N is just equal to the length of the body of the spool when the wire is wound, and as the arm reciprocates it will of course guide the wire from one end of the spool to the other. In combination with this adjustment of the fulcrum, the sleeve F is turned to move the friction-wheel E toward or from the center of the disk D', by means of which an adjustment is had whereby the arm N moves during each revolution of the spool a distance equal to the diameter of the wire that is being wound. The result is the wire is wound evenly and compact, leaving no spaces between the coils. The spool during the process of winding is of course constantly increasing in size, but each revolution draws so much wire from the reel as is necessary to reach around the spool of whatever size it may be, and the arm N, as aforesaid, moves along just far enough with each revolution to press the coils snugly against each other, and the length of stroke is such that the arm is reversed just as the wire reaches the end of the spool. After the spool is filled the wire is cut, and the end thereof is secured by being bent around a small pin (not shown) driven into the spool for the purpose.

What I claim is—

1. The combination, with a spindle for revolving the spool and devices for imparting motion to said spindles, of a slotted lever having a movable fulcrum, a reciprocating arm for guiding the wire to the spool, connected with said slotted lever and adjustable friction-disks, and intermediate devices for imparting movement from the spindle to the slotted lever, and for regulating the relative movements of the spindle and wire-guiding arm, substantially as set forth.

2. The combination, with a spindle for holding a spool, means for operating the spindle, a wire-guiding arm, and the disk D', of the disk E, engaging the disk D', the movable sleeve supporting said disk E, and the intermediate devices, substantially as described, for transmitting the motion of the disk E to the wire-guiding arm, substantially as set forth.

In testimony whereof I sign this specification, in the presence of two witnesses, this 2d day of September, 1884.

GEORGE W. MALIN.

Witnesses:

CHAS. H. DORER,

ALBERT E. LYNCH.