

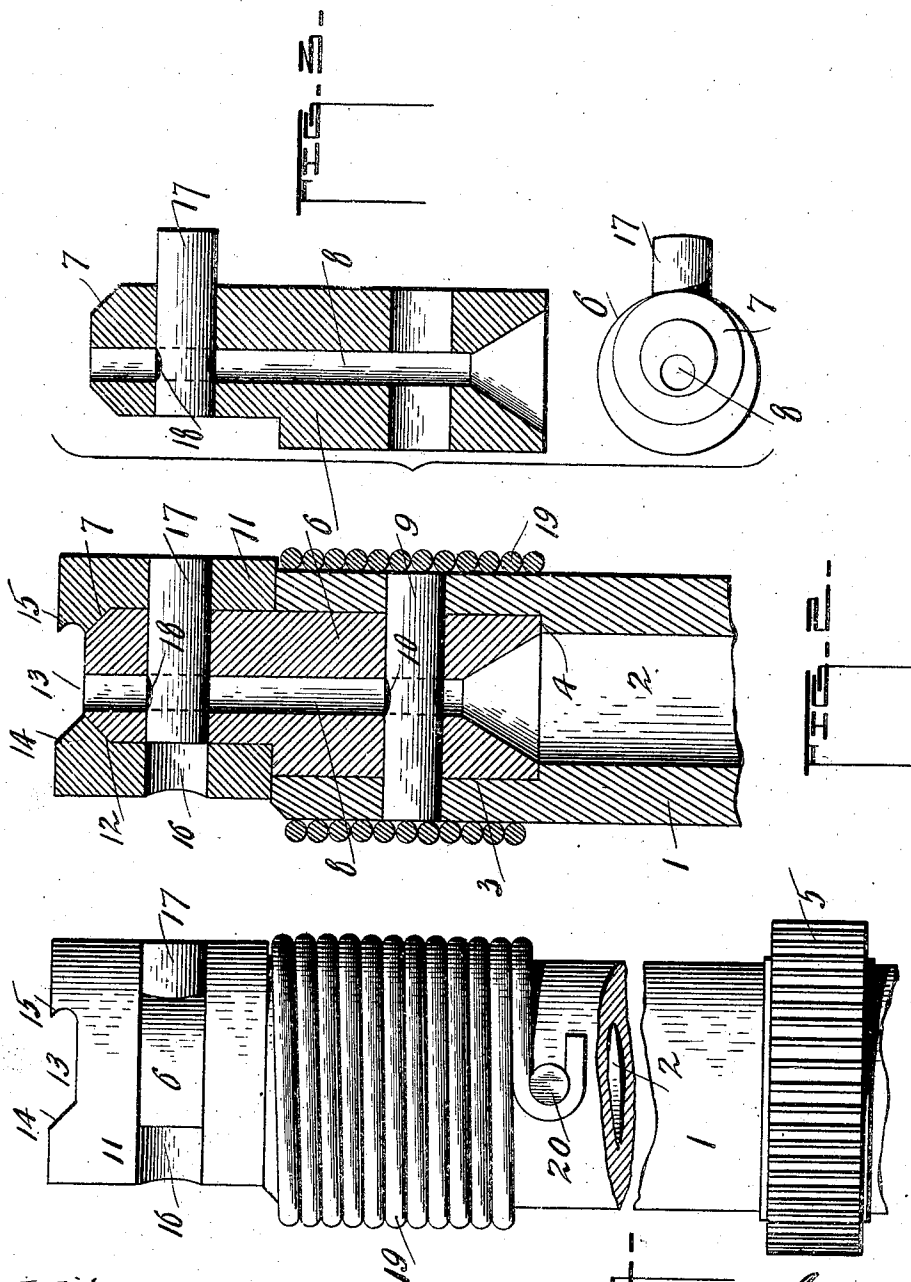
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PATENTED FEB. 12, 1907.

J. W. SOMMER.
COILING SPINDLE.

APPLICATION FILED APR. 25, 1904.

2 SHEETS—SHEET 1.



Witnesses:
Robert M. McCormick
J. E. Stone

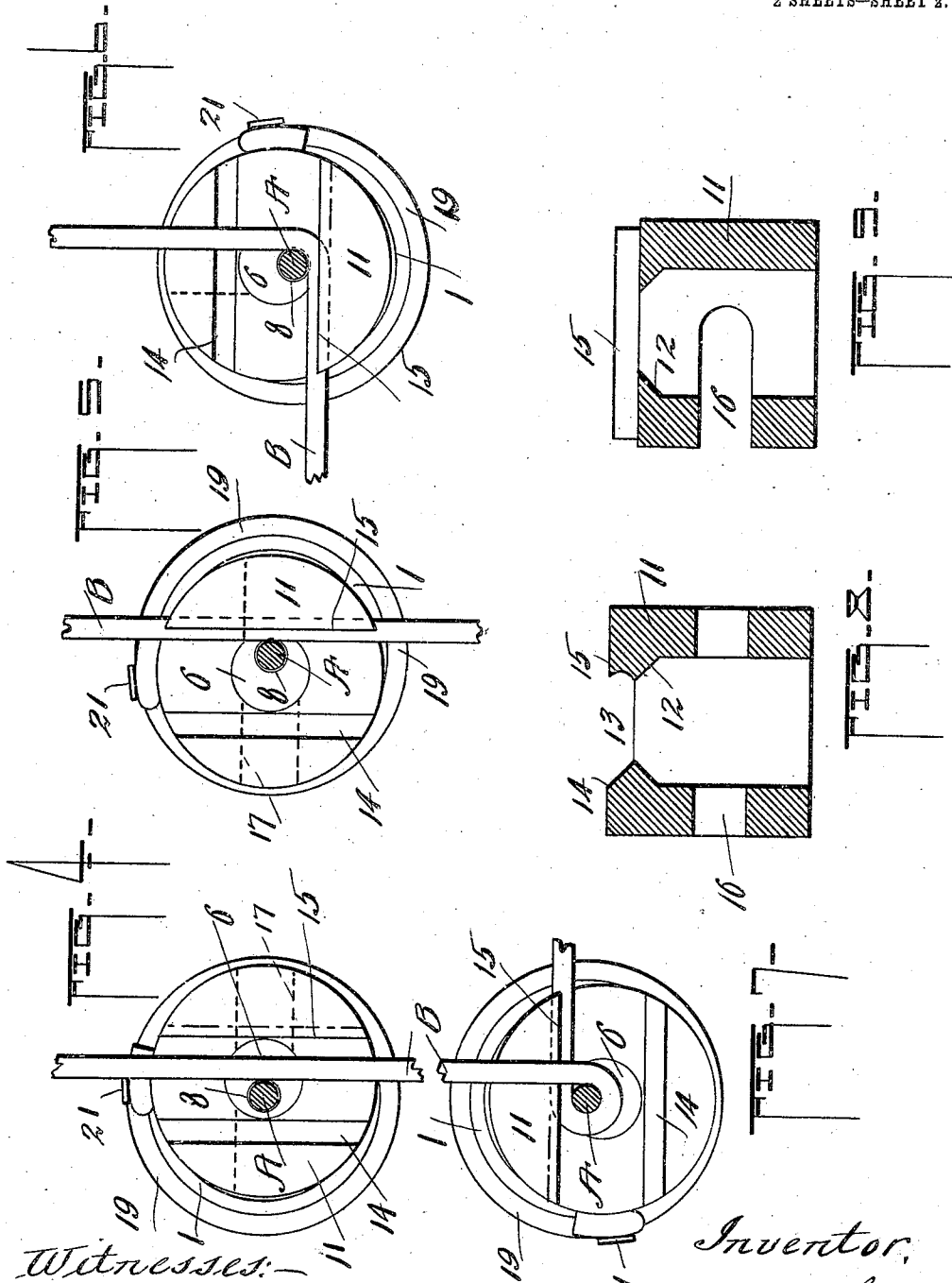
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UNITED STATES PATENT OFFICE.

JOSEPH W. SOMMER, OF PEORIA, ILLINOIS.

COILING-SPINDLE.

No. 844,206.

Specification of Letters Patent.

Patented Feb. 12, 1907.

Application filed April 25, 1904. Serial No. 204,921.

To all whom it may concern:

Be it known that I, JOSEPH W. SOMMER, a citizen of the United States, residing at Peoria, in the county of Peoria and State of Illinois, have invented certain new and useful Improvements in Coiling-Spindles; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to 10 which it appertains to make and use the same.

This invention has reference to mechanism for coiling one wire around another, such as a stay-wire around a strand-wire, in wire-fence making, but may be employed for other and various uses.

The invention has for its further object a coiling-spindle through which is adapted to be fed a continuous wire and in the provision 20 of new and improved mechanism at the head of the spindle to insure the tight wrapping of a wire around said continuous wire.

A further object of this invention is a coiling-spindle provided with a longitudinal opening, a sleeve supported on the head end 25 of the spindle to revolve intermittently during such rotation of its spindle, the arrangement of the spindle and sleeve being such that the wire-opening in the spindle is eccentrically disposed with reference to the center of said sleeve.

The invention consists, further, of a spindle; a stem carried in the head end of the spindle and having a portion extending 35 above the upper end of said spindle, the stem fixed for continuous rotation with its spindle; a sleeve eccentrically carried upon the upper end of the stem and so attached to said stem that it is intermittently actuated during the continuous rotation of the spindle and its 40 stem, and in the provision of a spring coiled around the spindle, one end thereof secured to the spindle and the opposite end secured to the sleeve provided for the purpose of increasing the speed of rotation of the sleeve at 45 predetermined intervals.

Further objects and aims of the invention will become clear from the following specification and the drawings forming a part 50 thereof, in which—

Figure 1 is an elevation of a coiling-spindle embodying my improvements. Fig. 2 is a vertical section through the spindle. Fig. 3 is a vertical section and a plan view of the stem carried in the spindle. Figs. 4, 5, 6, 55 and 7 are plan views of a spindle containing

my improvements and showing four different steps in the operation of the coiler coiling one wire around another. Figs. 8 and 9 are vertical cross-sections taken oppositely to 60 each other through the sleeve carried by the stem at the head of the spindle.

Like numerals of reference indicate corresponding parts throughout the figures.

1 denotes a tubular spindle which may be 65 of any desired length, having the central longitudinal opening 2 extending through the spindle, and at 3 the opening through the spindle is made much greater in diameter and provides a shoulder 4. The spindle may 70 be journaled in any suitable support and at any desired angle and may be driven, as shown in Fig. 1, by securing a gear-wheel 5 to the spindle and drive the same from a suitable source of power, or other well-known 75 driving means may be substituted therefor.

In the head end of the spindle and within the enlarged opening 3 thereof is carried a stem 6, the same resting upon the shoulder 4, and the body of the stem extends up be- 80 yond the outer edge of the spindle 1. The body of the stem 6 above the upper end of the spindle is somewhat reduced in diameter, and the center of such reduced portion is eccentric to the center of its lower portion and 85 the spindle 1, in which it is carried. The upper end of the stem is beveled, as at 7, and extending through the center of the lower portion of the stem 6 is a tubular opening 8, which also extends through the body of said 90 stem and is eccentric to the center of the upper reduced portion of said stem, the lower portion of the opening 8 being tapered outwardly to the diameter of the opening 2 in the spindle 1 for ease in passing a wire up 95 through the spindle and its stem. The stem 6 is fixedly carried in the spindle 1 for continuous rotation therewith and so held by means of a transverse pin 9, carried through the body of the spindle 1 and the lower body 100 portion of the stem 6, and the pin 9 is provided with the transverse opening 10, which coincides with and becomes a part of the opening 8 in the spindle 6.

On the upper extended portion of the stem 105 6, which is that portion above the upper end of the spindle 1, is carried a sleeve or similar member 11, and the center of the sleeve or member 11 is the center of the upper reduced portion of the stem 6, so that the position of the opening 8 in the stem 6 is not only 110 eccentrically disposed to the axis of the re-

duced portion of the stem 6, but is also eccentrically disposed to the axis of the sleeve 11. The sleeve is provided with the inner tapered or beveled face 12, corresponding to the bevel portion 7 of the upper end of the stem 6. The upper face of the sleeve 11 is provided with the cut-out or slotted portion 13, the base of which is on a line with the upper face of the stem 6. One of the walls of such cut-out portion 13 is beveled, as at 14, and the opposite wall shows a concave face, as at 15.

The sleeve 11 is provided in its body with a semicircular cut-out portion or slot 16 and movable in such cut-out portion or slot 16 is a stem or pin 17, transversely carried in the upper reduced portion of the stem 6, one end of the pin 17 extending through and beyond the outer face of the stem 6, and such extension is carried in the semicircular cut-out or slotted portion 16 of the sleeve 11. Transversely disposed through the pin 17 is a wire groove or opening 18, coincident with and forming a part of the wire-opening 8 through the stem 6. Thus it will be seen that the stem 6 may make half of a revolution before the sleeve 11 is caused to turn, which is accomplished by the pin 17 abutting with the wall of the slot or cut-out portion 16, when the sleeve will be turned therewith, all of which will be further described.

The sleeve 11 is held under tension of a spring 19, which in this instance is a coil wound around the spindle 1, as shown in the figures, the lower end of the coil being secured at 20 to the body of the spindle and the upper end of the coil being secured at 21 to the outer face of the sleeve 11, the office of said spring being to draw the sleeve in the same direction of rotation in which the spindle 1 is rotated, which will be further described.

In the operation of coiling the end of a stay-wire around a strand-wire the parts of the device will be in positions somewhat as seen in Figs. 1, 2, and 4—that is, they will be in this position at a time just previous to the starting of the coil. A strand-wire A is passed up through the spindle 1 into the stem 6 and through the opening 8 therethrough and passing through the wire-openings in the pins 9 and 17. B is a stay-wire adapted to be fed transversely to the length of the strand-wire A, and the end of such stay-wire B is carried across and through the slotted open face 13 of the sleeve 11, and said stay-wire lies between the face of the strand-wire and the groove or concave face 15 of the sleeve 11. The strand-wire A, which is carried eccentric to the sleeve 11 during a partial rotation of the spindle by reason of the eccentric disposition of the upper reduced end of the stem 6, will engage during its rotation the body of the stay-wire B and force said stay-wire B into the concave face of the sleeve 11, as seen in

Fig. 5, and hold it rigidly in such position during the remainder of the twisting or coiling said stay-wire B around the strand-wire A. The placing of a stay-wire in the cut-out portion of the sleeve or across the slotted face thereof, with the body of said stay-wire rigidly held in the direction in which the same is directed to said stem and the sleeve thereof when the stem is revolved and the strand-wire impinges upon the body of the stay, as seen in Fig. 5, the stay will lock the position of the sleeve until the pin 17 moves around in and the distance of the slot 16 therein, when it will abut with the opposite end of said slot 16 and cause to be rotated in the same general direction therewith the sleeve 11. Otherwise, if there were no stay or other means on the face of the sleeve to lock it against rotation as the spindle 1 was revolved the spring 19, which is fast to both sleeve and spindle, would draw the sleeve and cause it to rotate with and in the direction of rotation of said spindle; but the fact that there is means—and in this instance it is the stay—to retard the movement of the sleeve the rotating of the spindle will not effect the rotation of the sleeve until the pin 17 has traversed the distance of the slot 16, when it will then cause the sleeve to rotate therewith. The strand-wire having shifted its position by reason of the eccentric disposition of the pin in the sleeve will, when it reaches a position as seen in Fig. 5, impinge upon the stay-wire and hold it rigidly in the sleeve and insure its tight wrapping around said strand-wire. The rotation of the spindle and sleeve will coil the end of a stay around a strand wire, somewhat as seen in Figs. 6 and 7, and as many more wraps made as is desirable, it being understood from the above that the transverse bearing of a stay-wire is fixed, so that during the coiling of the end of said stay-wire the body of such wire leading to the coil will remain in one position, thus permitting the grooved portions 15 of the sleeve 11 in its rotation to carry with it the end of a stay-wire and direct the same around a strand-wire.

In coiling the ends of a stay around the strand wires it is preferable to direct the free ends of the stays always under, as seen in Fig. 7. This is accomplished somewhat as in Fig. 6 by engagement of the body of the stay-wire by the bevel-face 14 of the sleeve 11, which is arranged parallel with the groove 15 and opposite thereto. Thus as the sleeve 11 is rotated the bevel-face 14 thereof will ride under the body of the stay and permit the coiling portion of such stay to be directed under, as above described and as seen in the figures.

The office of the spring 19 is to insure the sleeve 11 being always in position to receive the ends of succeeding stay-sections as they are fed to the coiler for coiling such stay-sec-

tions around the body of strand-wires passing through the coilers. Simultaneous with the completion of a coil of the end of a stay around the strand the strand-wire by suitable means is drawn through the coiler to permit a succeeding stay to be fed and received somewhat as seen in Fig. 4.

The drawing out of the strand-wire through the coiling-spindle relieves the tension of the stay-wire on the sleeve, when the sleeve will continue its rotation in the direction of the spindle and stem, but move faster than the spindle, caused by the spring 19, whose office it is when the stay-wire is removed from the slotted face of the sleeve to draw said sleeve in the direction of rotation of said spindle until the opposite end of its slotted portion 16 will catch up with and abut against the pin 17, when the parts will again be in the position seen in Fig. 4 and a stay-wire dropped onto the sleeve and the same operation carried on as before for coiling the ends of all succeeding stay-sections around the strand-wires as they are drawn through the coilers.

The rotation of the stem in actual practice is very rapid, and the stopping of the sleeve is momentary and at intervals, but sufficient to adapt the dropping of a stay-section onto the upper face of the sleeve and in the open face 13 thereof.

It is preferable to rotate the spindle continuously; but it may be arranged to rotate said spindle intermittently under certain conditions, and I do not wish to be understood as confining myself to such an arrangement; nor do I wish to be restricted to the eccentric arrangement of the strand-wire moving into position to lock the stay for tightly wrapping the same around said strand-wire, as it is obvious that other and various changes may be made without departing from the principle and scope of invention herein.

What I claim is—

1. A device of the character specified, comprising a coiling-spindle through which is passed a strand-wire, an intermittently-revoluble member carried on one end of said spindle and provided with means for receiving a stay-wire, and means on the member adapted to lock the position of the stay-wire relative to its strand-wire, during the rotation of the spindle.

2. A device of the character specified, comprising a coiling-spindle through which is passed a strand-wire, an intermittently-revoluble member carried on one end of the spindle and provided with means for receiving a stay-wire, and means provided on said member adapted to clench the stay on the strand preliminary to coiling the said stay around the strand.

3. A device of the character specified, comprising a spindle through which is passed a strand-wire, a stay wire-receiving member on

one end of said spindle, provided with means for retaining and locking the position of a stay relative to its strand, for tightly wrapping said stay-wire around the strand-wire, and means on the sleeve adapted during its rotation to direct the end of a stay always under as the same is wound upon said strand-wire.

4. A device of the character specified, comprising a spindle through which is passed a strand-wire, an intermittently-revoluble member carried on one end of said spindle and provided with means for receiving a stay-wire, means for locking the position of the stay-wire on the member during its period of rest, means on the spindle for imparting an intermittent rotation to the member, and means for momentarily increasing the speed of rotation of said member preceding its period of rest.

5. In a device of the character specified, the combination of a revoluble spindle through which is passed a strand-wire, a stay-wire-receiving member carried by said spindle and adapted to be intermittently rotated therewith, means for rotating the member, means on the member for receiving and retaining a stay-wire, and means on the member adapted during its rotation to direct the end of such stay-wire always under as the same is wound upon the strand-wire, substantially for the purposes set forth.

6. A device of the character specified, comprising a continuously-revoluble spindle, a sleeve eccentrically carried on one end of said spindle and intermittently revoluble therewith.

7. A device of the character specified, comprising a continuously-revoluble member, a stem attached to and extending above the end of said member, the extension thereof being eccentric to the axis of said member, and a sleeve carried on said extension and intermittently revoluble therewith.

8. A device of the character specified, comprising a continuously-revoluble spindle having a wire-groove therethrough, a sleeve carried by said spindle and eccentrically disposed to its wire-groove, and means on said sleeve for retaining a wire adapted to be coiled around a wire passed through said spindle.

9. A device of the character specified, comprising a continuously-revoluble spindle and stem having a wire-groove, a sleeve carried on said stem and disposed eccentrically to the wire-groove in said stem, means for intermittently revolving the sleeve with said spindle, and means for increasing the speed of rotation of such sleeve at predetermined intervals during the rotation of the spindle.

10. In a device of the character specified, the combination of a continuously-revoluble spindle, a sleeve carried on the upper end of the spindle and so carried thereby that the

spindle may make one-half of a revolution and during such period the sleeve is at rest, means on the spindle for causing the sleeve to rotate therewith after making one-half of a revolution, and means for increasing the speed of rotation of such sleeve at predetermined intervals during the rotation of the spindle.

11. In a device of the character specified, the combination of a tubular spindle, a stem carried in one end of the spindle and having a reduced extension which is eccentric to the axis of said spindle, a sleeve carried on the extension of the stem and provided with a semicircular slot, a transverse pin in the extension of the stem of the spindle, movable in the slot of the sleeve, the sleeve adapted to be retained in a fixed position relative to the rotation of the spindle until the transverse pin thereof travels the distance of the slot when the sleeve is caused to rotate therewith, and means operating at predetermined intervals for increasing the speed of rotation of the sleeve, substantially for the purposes set forth.

12. In a device of the character specified, the combination of a spindle having a reduced extension which is eccentric to the axis of the spindle and a wire-groove extending through the spindle and its extension, the groove in the extension being disposed eccentric to the axis thereof, a sleeve carried on the extension of the spindle and adapted to be intermittently revoluble therewith, the face of the sleeve having a cut-out portion, one wall of which is concave and the opposite wall beveled, substantially as described.

13. In a device of the character specified, the combination of a spindle having a reduced extension, and provided with a wire-groove, a sleeve carried on the extension of the stem eccentric to the wire-groove therein and the body of said sleeve provided with a semicircular slot, a pin carried in the extension of the spindle and normally engaging the wall at one end of said slot and adapted to make a one-half revolution without disturbing the position of said sleeve, and adapted when reaching the wall at the opposite end of said slot to cause said sleeve to revolve therewith a predetermined distance, and means operating at predetermined intervals for increasing the speed of rotation of the sleeve, substantially as described.

14. In a device of the character specified, the combination of a spindle having a wire-groove, a sleeve carried on one end of the spindle and disposed eccentrically to the wire-groove therein, means on the spindle for intermittently causing the sleeve to rotate therewith, and a coil-spring wound around the spindle one end secured thereto and the opposite end secured to the sleeve for the purpose of increasing the speed of rota-

tion of the sleeve on the spindle at predetermined intervals, for the purposes set forth.

15. In a device of the character specified, the combination of a continuously-revoluble spindle having a wire-groove, a member carried on one end of the spindle and intermittently revoluble therewith, means on the spindle for causing the member to rotate therewith, a wire-receiving recess in the upper face of the member and a coil-spring having one end secured to the member and its opposite end secured to the spindle, substantially as described.

16. In a device of the character specified, the combination of a tubular spindle having a gear secured to the body thereof, a stem secured in one end of the spindle and having an extended portion and a wire-groove passing longitudinally therethrough, a sleeve on the extension of the stem and disposed eccentrically to the wire-groove therein, the sleeve provided with a semicircular slot and the stem having a transverse pin movable in said slot for the purposes set forth, the upper face of the sleeve provided with a transverse slotted portion, one wall of which is grooved and the opposite wall beveled, and a spring coiled around the spindle having one end secured to the spindle and the opposite end to the sleeve, substantially as described.

17. In a device of the character specified, the combination of a tubular spindle, a gear on one end thereof, a stem carried in the opposite end of the spindle and having a reduced extension, a pin for locking the spindle and stem in their relative positions, a pin carried transversely in the reduced extension of the stem and having a protruding portion, the stem having a wire-groove longitudinally therethrough which said said groove also passes through the aforesaid pins, a member carried on the extension of the stem eccentric to the wire-groove therein and adapted by means of the transverse pin to be intermittently rotated therewith, the upper face of the member adapted for receiving and retaining a wire, and a coil-spring for increasing the speed of rotation of said member at predetermined intervals, substantially as described.

18. A device of the character specified, comprising a spindle through which is passed a strand-wire, and a stay-wire-receiving member on one end of said spindle provided with means adapted during a partial rotation of the spindle to clench a stay-wire on the strand preliminary to the coiling of said stay on the strand.

19. A device of the character specified, comprising a spindle through which is passed a strand-wire, an intermittently-revoluble member carried on one end of said spindle and provided with means for receiving a stay-wire, and means for locking the position of

the stay-wire on the member during its alternate period of rest.

20. A device of the character specified, the combination of a spindle through which is passed a strand-wire, a sleeve carried on one end of the spindle and having a stay-wire-receiving seat, between which and the strand a stay-wire is adapted to be placed,

and means for clenching the stay against the strand.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH W. SOMMER.

Witnesses:

P. W. SOMMER,

B. L. SOMMER.