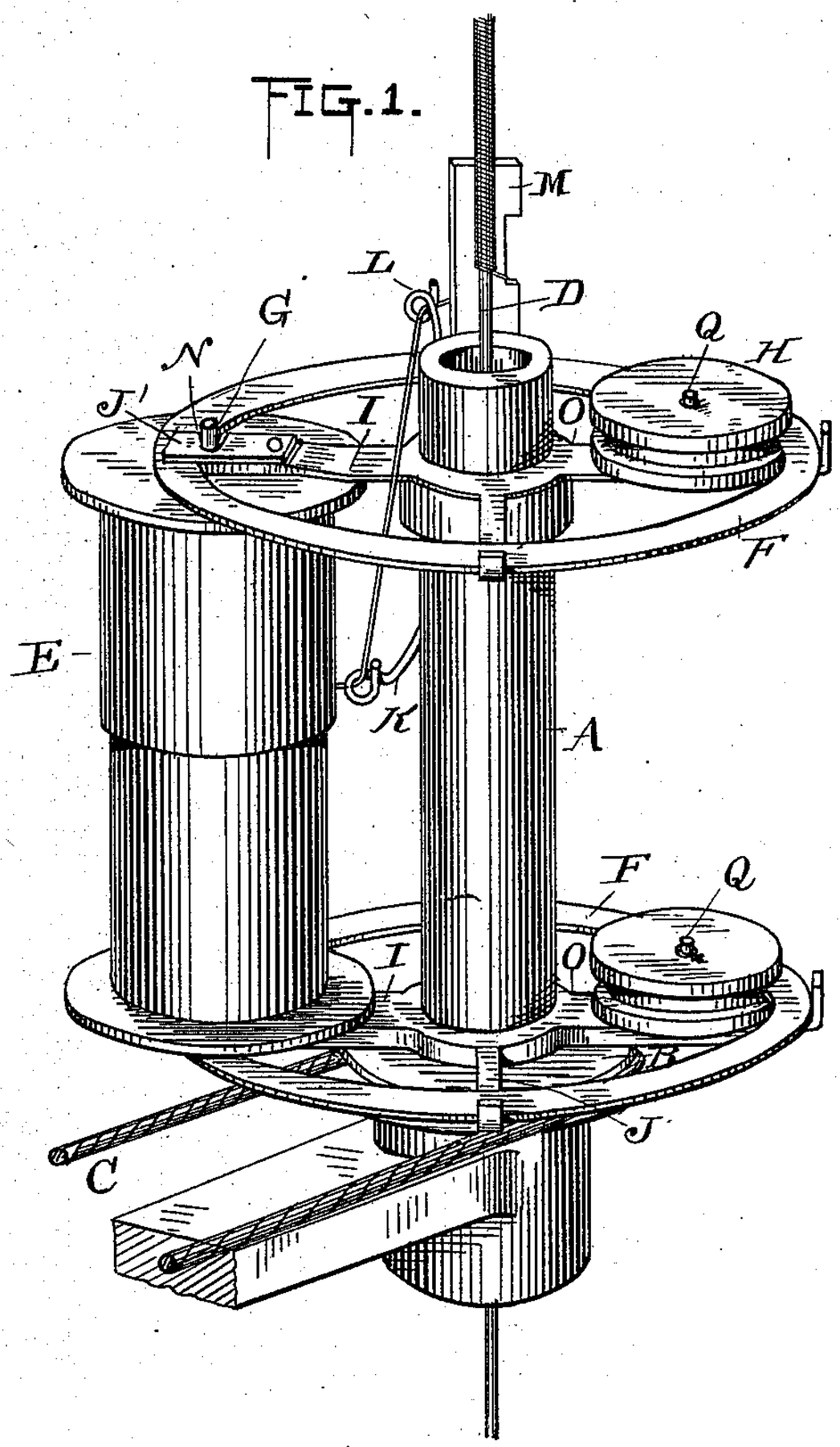
(No Model.) 2 Sheets—Sheet 1.

W. A. PHILLIPS.

MACHINE FOR COVERING WIRE.

No. 413,629. Patented Oct. 22, 1889.

FIG. 1.



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(No Model.) 2 Sheets—Sheet 2.

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MACHINE FOR COVERING WIRE.

No. 413,629. Patented Oct. 22, 1889.

FIG. 2.

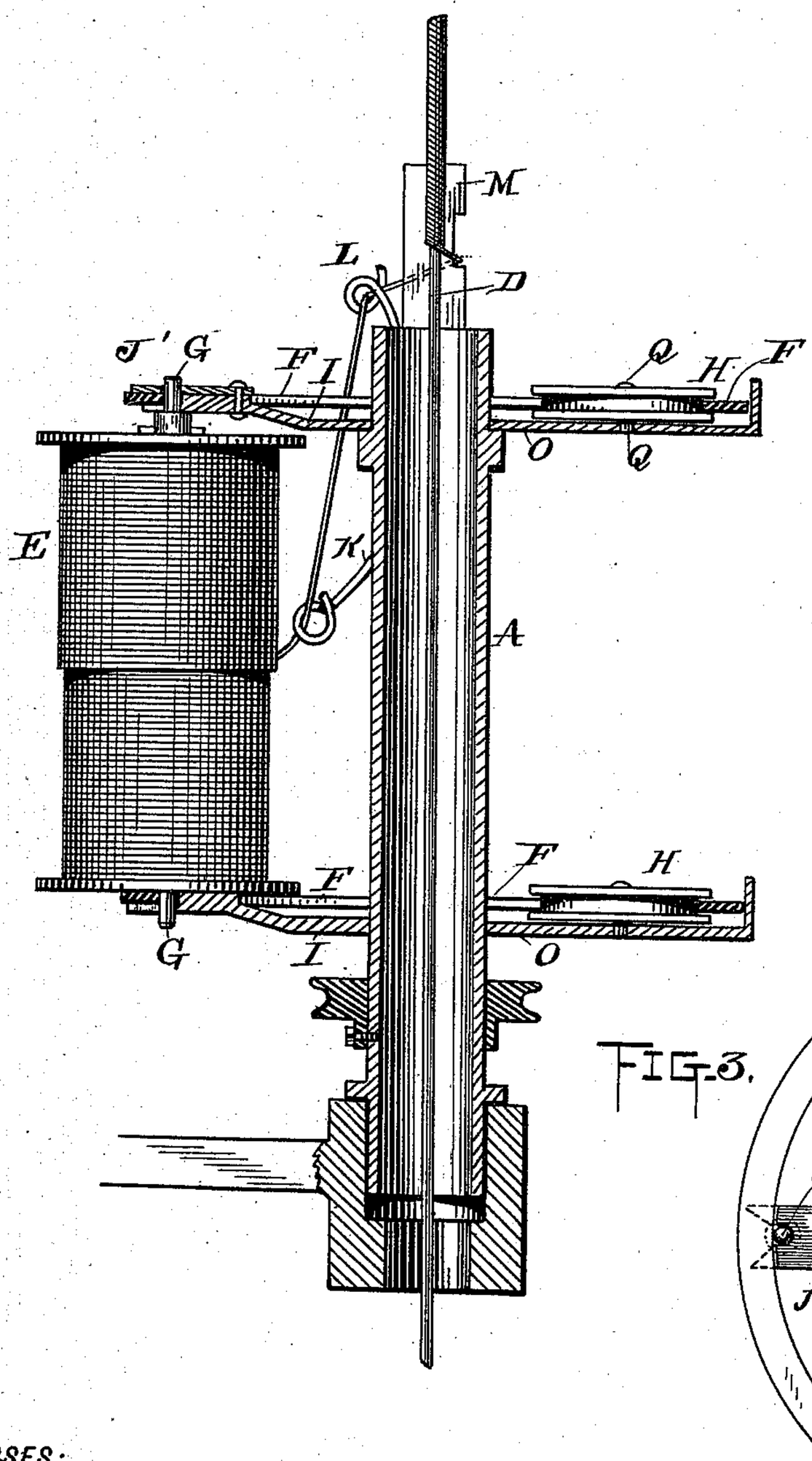
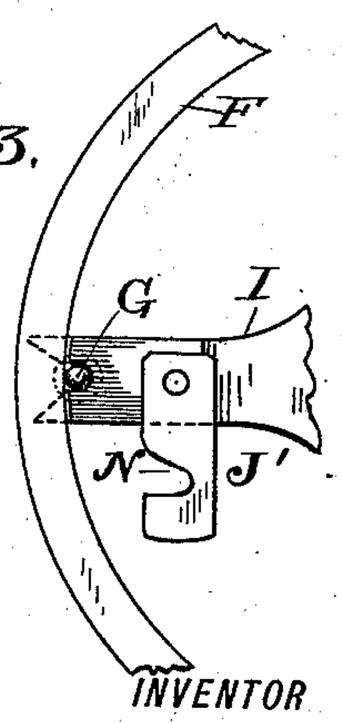


FIG. 3.



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UNITED STATES PATENT OFFICE.

WILLIAM A. PHILLIPS, OF SCHENECTADY, NEW YORK, ASSIGNOR TO THE EDISON MACHINE WORKS, OF SAME PLACE.

MACHINE FOR COVERING WIRE.

SPECIFICATION forming part of Letters Patent No. 413,629, dated October 22, 1889.

Application filed April 10, 1889. Serial No. 306,695. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. PHILLIPS, a subject of the Queen of Great Britain, residing at Schenectady, in the county of Schenectady and State of New York, have invented a certain new and useful Improvement in Machines for Covering Wire, of which the following is a specification.

My invention relates particularly to that class of thread-winders for winding thread or other material upon a wire wherein the supply-bobbin has a motion of revolution around the wire to be covered, and also a motion of rotation on its own axis; and the main object of my invention is to enable a high speed to be maintained without exerting undue or uneven tension on the thread, whereby rapid winding is effected without danger of breaking the thread during the winding operation. I accomplish this object by providing a guide for the supply-bobbin in its revolution around the central spindle, which guide is free to rotate, and with which the axis of the spool has a rolling contact, whereby the friction on the axis of the spool is reduced to a minimum and the spool is permitted to rotate at a high rate of speed without danger of breaking the thread. I further aid the attainment of the object stated by providing a counterbalance-weight equal to the average weight of the supply-bobbin located diametrically opposite the supply-bobbin, whereby the vibrations due to the centrifugal force of the bobbin in its revolution around the central spindle are neutralized and the machine caused to run steadily and evenly.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of my improved thread-winder; Fig. 2, a vertical section and partial elevation thereof, and Fig. 3 shows the bearings of the spindle of the spool at its upper end.

A is a hollow spindle, supported in any suitable manner and driven by the pulley B and driving-band C, or in any other suitable manner. Fed through the hollow spindle is the wire D to be covered, the feed being effected by any suitable feeding device, and the speed of feed regulated to the size of covering material and number of revolutions of the supply-bobbin, as is well understood.

The supply-bobbin E is guided in its revolution around the central spindle by means of the guide-rings F, one of which is preferably located at each end of the bobbin. Each of these guide-rings is preferably a flat ring, as shown, free to rotate, and is centered with relation to the spindle A by means of the axis G of the bobbin, and the weight H in contact with its inner periphery at points preferably diametrically opposite.

Carried by the spindle A, preferably at each end of the bobbin, is an arm I, which serves to effect the revolution of the bobbin around the central spindle, and also serves as a rest for the ring F in its rotation. Additional supports for the guide-rings may be employed, such as the arms J and O. The lower arm I receives the axis G of the supply-bobbin, which is preferably a spindle passing loosely through the center of the bobbin, as shown in Fig. 2. The upper arm I has a V-shaped recess, which receives the upper end of the spindle of the bobbin. This V-shaped recess is just deep enough to hold the spindle of the bobbin in contact with the inner periphery of the upper guide-ring and not permit it to fall away therefrom. The lower end of the spindle is also held in contact with the inner periphery of the lower guide-ring by the lower arm I.

The bobbin is inserted in place by passing the lower end of its spindle into its bearing between the lower arm I and lower ring F. Then the upper guide-ring is raised sufficiently to permit the upper end of the spindle to be placed in the V-shaped recess of the upper arm I. The upper guide-ring is then restored to its position on the arm I, and the pivoted slide I′, provided with slot I″, is brought into position over the top of the guide-ring, the spindle of the spool entering the slot of the slide I′. By this arrangement the operation of placing and removing the supply-bobbin is very much simplified, and the slide I′ holds the guide-ring in place, yet leaving it possible to readily remove it when desired. The roller H may be grooved, as shown, and the guide-ring entered in the groove. This will retain the guide-ring in po-

sition at the end opposite the spindle of the supply-bobbin.

The rotation of the bobbin on its own axis is effected by the tension of the thread unwound by the revolution of the bobbin around the central spindle. Any suitable thread-guides may be used to guide the covering material from the supply-bobbin to the wire being covered, and the guides used may exert a tension on the thread. I have shown the guides K, L, and M for such purpose. The rings F being free to rotate and the axis of the bobbin bearing against each of them at only one point, it will be seen that the friction on the axis of the bobbin is inconsiderable. Diametrically opposite the arm I, at each end of the bobbin, is another arm O, preferably formed in one piece with said arm I, as shown. Upon this arm O is mounted the weight H, preferably in the form of a roller, mounted on a fixed stud Q. This weight is about equal to the average weight of the supply-bobbin where only one weight is used; but when two are used, as shown, one for each end of the supply-bobbin, each will be about half the average weight of the supply-bobbin. The chief function of the weight is to counteract the tendency of the centrifugal motion of the supply-bobbin to jar the machine; but it also serves, as before stated, to aid in centering and securing the ring F in place, and that it may oppose no resistance to said ring in its rotation is the object of loosely mounting it on the stud Q, whereby a rolling friction is obtained between the ring and weight.

It will be seen that by the use of the devices just described the vibratory effects set up by the centrifugal force of the revolving spool are rendered nugatory and the friction on the axis of the spool reduced to a minimum, whereby, on the whole, a machine is produced which may be run at a high speed, evenly and without jar, and in which the tension on the thread is slight and the danger of its breaking therefore small.

What I claim is—

1. In a thread-winder for covering wire, the combination of a central spindle, means adapted to revolve a supply-bobbin around said spindle, and a guide for said supply-bobbin in its revolution around said spindle additional to and independent of the revolving means, substantially as set forth.

2. In a thread-winder for covering wire, the combination of a central spindle, means adapted to revolve a supply-bobbin around said spindle, and a ring-guide for said supply-bobbin in its revolution around said spindle, substantially as set forth.

3. In a thread-winder for covering wire, the combination of a central spindle, means adapted to revolve a supply-bobbin around said spindle, and a guide for said supply-bobbin in its revolution around said spindle free to rotate, the axis of said bobbin being in contact with said guide, substantially as set forth.

4. In a thread-winder for covering wire, the combination of a central spindle, a carrier adapted to carry each end of a supply-bobbin, said carrier being rotated by said central spindle, and a guide-ring loosely supported on each of said carriers, the axis of said bobbin being in contact with the inner periphery of said guide-ring, substantially as set forth.

5. In a thread-winder for covering wire, the combination of a central spindle, arms carried by said spindle adapted to carry a supply-bobbin, a guide-ring loosely supported on each of said arms, the axis of the bobbin in contact with said arms and the inner periphery of said rings, and means on one of said arms for retaining said axis in contact with said ring, substantially as set forth.

6. In a thread-winder for covering wire, the combination of a central spindle, means adapted to revolve a supply-bobbin around said spindle, a guide-ring for said bobbin in its revolution around said spindle, free to rotate, and means for centering said guide-ring with relation to said spindle, substantially as set forth.

7. In a thread-winder for covering wire, the combination of a central spindle, means adapted to revolve a supply-bobbin around said spindle, an independent guide for said supply-bobbin in its revolution around said spindle, an arm, and a counter-weight carried by said arm, located diametrically opposite said bobbin and revolving with it around said central spindle, substantially as set forth.

8. In a thread-winder for covering wire, the combination of a central spindle, means adapted to revolve a supply-bobbin around said spindle, an independent guide for said supply-bobbin in its revolution around said spindle, and a counter-weight for each end of the supply-bobbin revolving with said bobbin, substantially as set forth.

9. In a thread-winding machine, the combination of a central spindle, means adapted to revolve a supply-bobbin around said spindle, a guide-ring for each end of the spindle of the supply-bobbin, a supporting-arm for each guide-ring rotating with said central spindle, a bearing for each end of the spindle of the supply-bobbin, being formed by the supporting-arm and the inner periphery of the guide-ring, substantially as set forth.

10. In a thread-winding machine, the combination of a central spindle, means adapted to revolve a supply-bobbin around said spindle, a guide-ring for the upper end of the spindle of said supply-bobbin, an arm for supporting said guide-ring, means for centering the same, and means for preventing the same from leaving its supporting-arm, substantially as set forth.

11. In a thread-winder for covering wire, the combination of a central spindle, a supply-bobbin and counter-weight, carriers for said bobbin and counter-weight arranged about said spindle diametrically opposite to each other, a guide-ring, free to rotate, for said supply-bobbin, said ring being centered by

the axis of the supply-bobbin at one point and the counter-weight at a point diametrically opposite, substantially as set forth.

12. In a thread-winder for covering wire, the combination of a central spindle, a supply-bobbin, a counter-weight for each end of the supply-bobbin, carriers for said bobbin and counter-weights, each of said counter-weights being situated diametrically opposite one end of the bobbin, and a guide-ring for each end of the supply-bobbin, free to rotate, said rings being centered by the axis of the supply-bobbin at one point and the counter-weight at a point diametrically opposite, substantially as set forth.

13. In a thread-winder for covering wire, the combination of a central spindle, a supply-bobbin and counter-weight arranged about said spindle diametrically opposite each other, carriers for said supply-bobbin and counter-weight, and a guide-ring for said supply-bobbin, free to be rotated by the axis of the bobbin, said counter-weight comprising a roller in contact with said ring and free to be rotated by it, substantially as set forth.

This specification signed and witnessed this 18th day of March, 1889.

WILLIAM A. PHILLIPS.

Witnesses:
D. CADY SMITH,
EVERETT SMITH.