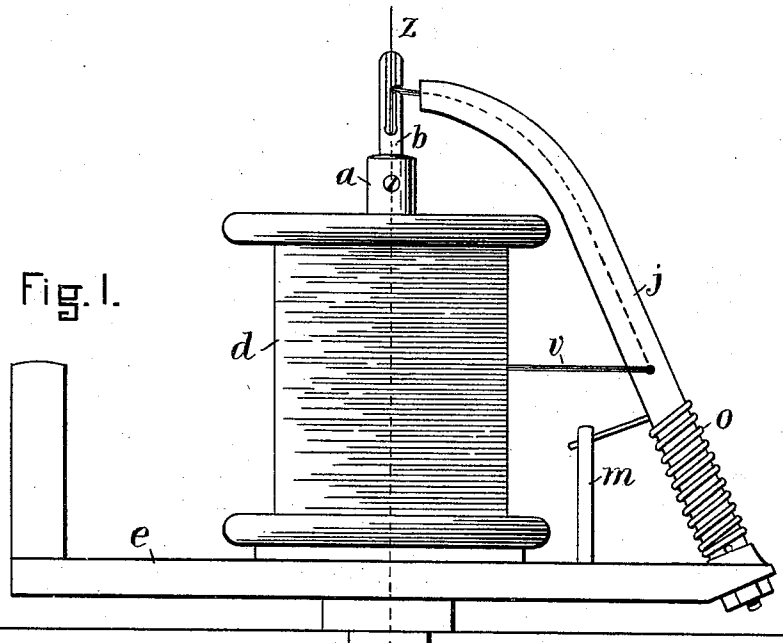
(No Model.)

J. McCAHEY.

WIRE COVERING MACHINE.

No. 455,970. Patented July 14, 1891.

Fig. 1.



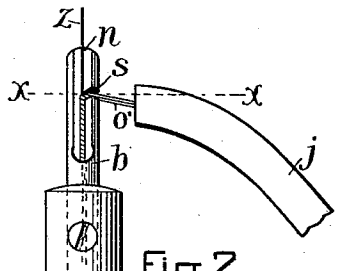


Fig. 2.

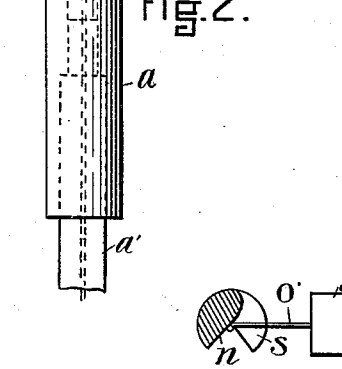


Fig. 5.

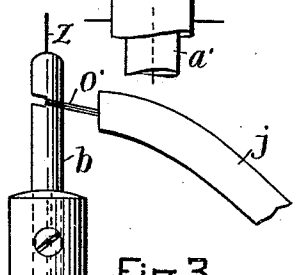


Fig. 3.

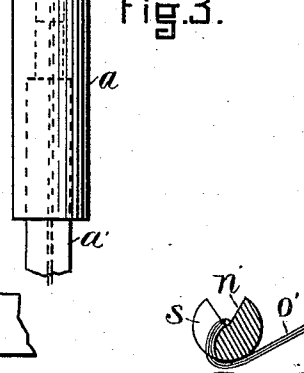


Fig. 6.

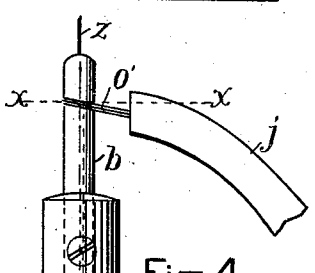


Fig. 4.

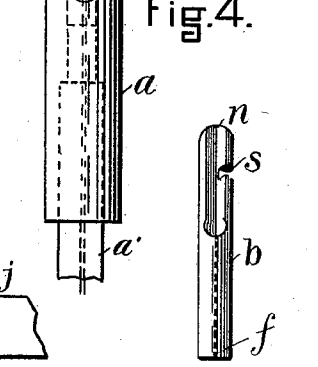


Fig. 7.

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WIRE-COVERING MACHINE.

SPECIFICATION forming part of Letters Patent No. 455,970, dated July 14, 1891.

Application filed September 12, 1890. Serial No. 364,768. (No model.)

To all whom it may concern:

Be it known that I, JOHN McCAHEY, of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Wire-Covering Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to that class of wire-covering machines that use a central spool to hold the covering material, and is an improvement on the invention described in my United States Patent No. 439,675, in which the guide for supporting the wire and laying the covering-strands properly thereon is made a part of the flier that conducts the strands from the serving-spool to the wire. Though the form of the groove for holding the wire and delivering the strands thereto and the position of the flier in that case were far in advance of previous attainments in that class of wire-coverers, still subsequent experiments prove that a guide held by the flier in that way must be subject to all the variations of that flier consequent to using the high speed indispensable to success in competition. The trouble caused by running the winder at high speed is mainly in the increased centrifugal action in throwing off the free end of the flier, to which the guide is attached, from the center line of the revolving mechanism. The lower end of the flier being held in the plate and its upper part brought over the spool in a curve, the effect of the centrifugal action in throwing it out is to raise the free end of the flier with the guide as the speed is increased and let it down back again when the speed is decreased, and this raising up of the guide causes the covering-strands to lap over one another, while the dropping back again leaves bare places on the wire. When we consider that doubling the speed quadruples the centrifugal effect, it will be seen that bad effects increase very rapidly as the speed increases and magnify the irregularities in the speed of the driving-shaft. To obviate this objection, and also to secure some other advantages, I place the guide in the end of the tube that holds the spool of covering material instead of on the end of the flier, so that the center of the wire as it lies in the guide is at all times in the exact center of rotation of the covering mechanism. I also obtain advantages by this arrangement in regulating the friction or tension and direction of the covering-strands in covering wire of different sizes, as will be explained farther on.

In the accompanying drawings, Figure 1 is an elevation of that part of the wire-covering machine immediately connected with the improvement. Fig. 2 is an enlarged elevation of the end of the tube which carries the spool of covering material and holds the guide and a part of the flier. Fig. 3 shows the same parts as Fig. 2, the guide having been changed in position. Fig. 4 is the same as Fig. 3, with a further change in the position of the guide. Fig. 5 shows a horizontal section of the guide, taken on the line x, Fig. 2. Fig. 6 shows a similar section to Fig. 5 taken on line x x, Fig. 4. Fig. 7 is a representation of the guide b separate from the tube a.

The part of the winder shown in the drawings consists of a plate e, revolving around a stationary tube a', made fast in the frame below. The plate e carries the spool d, holding the covering material, the flier-arm j, and stud m. The wire z to be covered is drawn through the tube a' from a reel placed in the machine below. The flier j is not made fast in the plate e, but left free to be turned away from over the spool d when it is necessary to put on a full spool. The spring o on the flier has one end attached to the flier and the other end carried in to bear against the stud m, so as to hold the arm over the spool while in operation.

The parts of the machine other than those described here are constructed and operated as set forth in my United States Patent No. 445,598, dated February 3, 1891. The guide b is a cylindrical piece of metal, the lower part of which is fitted in a hole made in the upper end of the tube a, so that it can be easily turned in its place, and the hole is made deep enough to allow the guide to be set higher or lower with regard to the end of the tube a. A set-screw k is fitted in one side of the tube a to screw in against the guide and hold it

in any desired position, the slotted head of the set-screw being let in flush with the outside of the tube to allow a spool of the covering material to pass over it when necessary. A longitudinal groove *n* is made in the upper portion of the guide *b*, the groove extending fully to the center of the guide or a little deeper, and a small hole *f*, starting from the center of the lower end of the guide, comes out into the lower end of the groove *n*, so that the wire *z*, after passing up through this hole *f*, will continue in a direct line along the bottom of the groove *n*, where the covering-strands are wound on it, and thence up to the reel. The strands of covering material reach the wire through a notch or recess *s* in the side of the groove, as in my patent above referred to, No. 439,675. This recess *s* is cut nearly down to the bottom of the groove, leaving a little of that side, about the height of the diameter of the wire, remaining to support the wire against the draft of the strands in covering. The recess *s* is made slightly spiraling to agree with the direction of the strands when wound on the wire, and just about the width of the covering-strands when spread out close together side by side, in which position they pass over the side of the groove left in the recess from the end of the flier onto the wire. The position of the guide *b* in the end of the tube *a* admits of an exact adjustment of the tension on the covering-strands, as it is only necessary to loosen the set-screw *e* and turn the guide *b* around, as seen in Figs. 1, 2, and 5, when the strands will pass almost directly from the flier *j* to the wire and meet with but little resistance from friction on the guide, and to increase the tension, by turning the guide to the position shown in Figs. 3, 4, and 6 the friction of the strands is increased on the guide by making them pass farther around it, by which it will be readily seen that the tension on the strand can be increased as desired by turning the guide in one direction and reduced by turning it in the other direction. The angle at which the strands wind on a fine wire differs from the angle when winding on a larger wire, and it is advantageous to adjust the direction of the strands from the flier to the wire to suit the size of the wire to be covered. To accomplish this, the guide *b* is set higher or lower in the tube *a* by loosening the set-screw, as in the case of adjustment of the tension, and when properly adjusted by tightening the set-screw that position will be maintained. By thus placing the guide in the center of the spool-tube and having its center in line with the center of revolution of the covering parts of the machine it will be free from all the perturbations and changes of position which it would be liable to if attached to the flier, however much the speed may be increased, and the covering of the wire will be performed with greater regularity and rapidity.

Having thus described my improvements, I claim as my invention—

In a wire-covering machine, the combination of a central revolving tube and a guide-tube lengthwise and axially adjustable therein and provided near one end with a longitudinal V-shaped slot, and a transverse slot rectangular in cross-section communicating therewith, substantially as described.

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BENJ. ARNOLD.