No. 824,171. PATENTED JUNE 26, 1906.

A. G. CHAMPLIN.

WIRE WRAPPING MACHINE.

APPLICATION FILED MAR. 15, 1905.

2 SHEETS—SHEET 1.

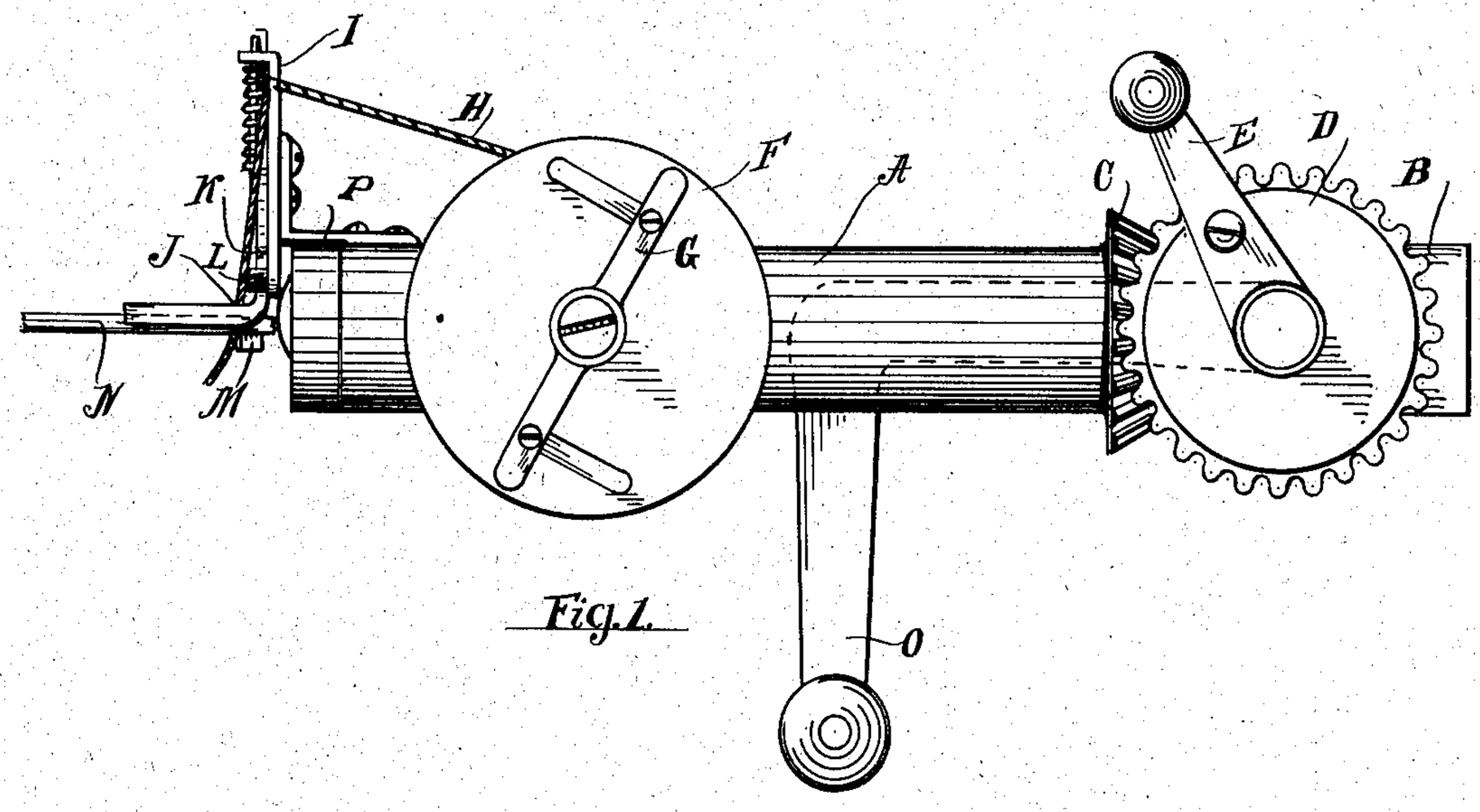

Fig. 1.

Fig. 2.

Witnesses

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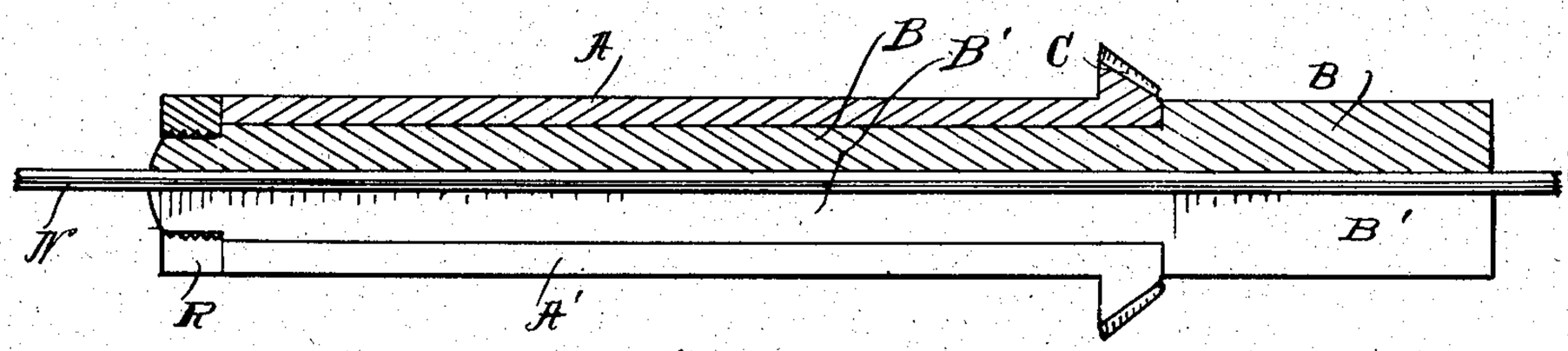

Fig. 3.

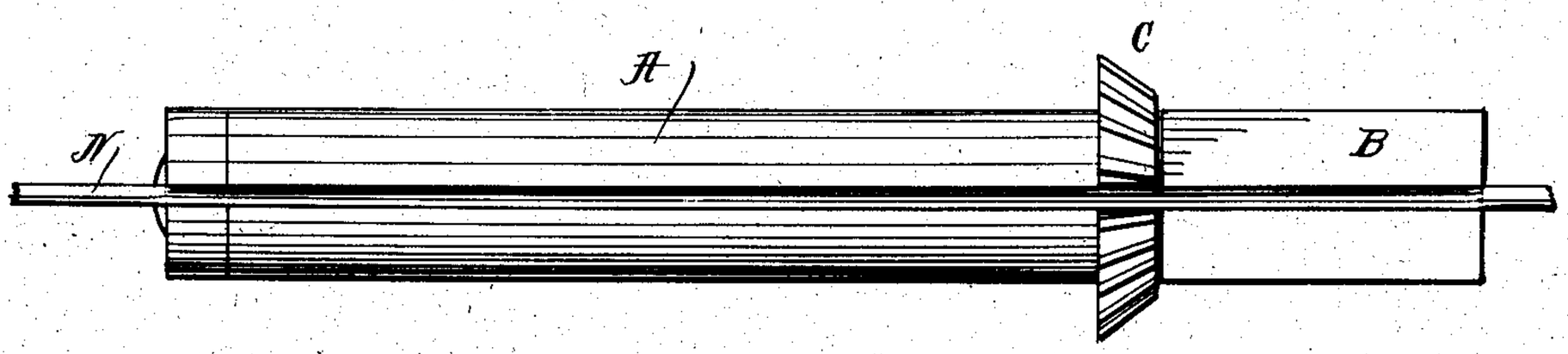

Fig. 4.

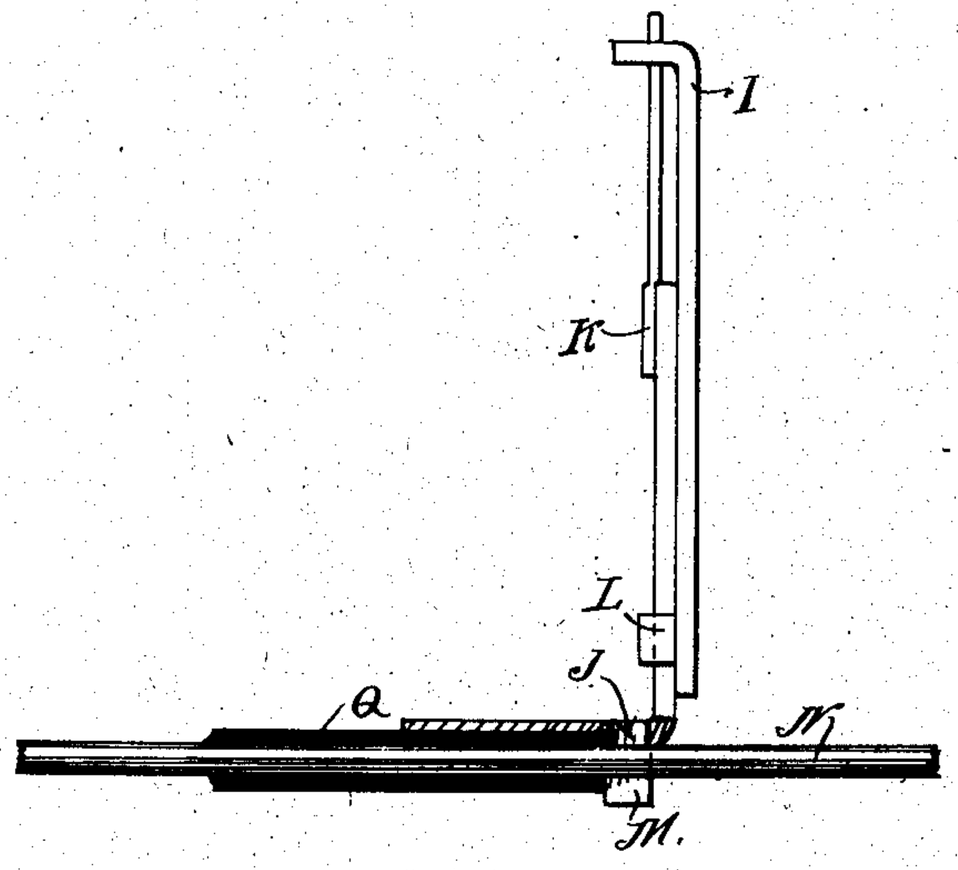

Fig. 6.

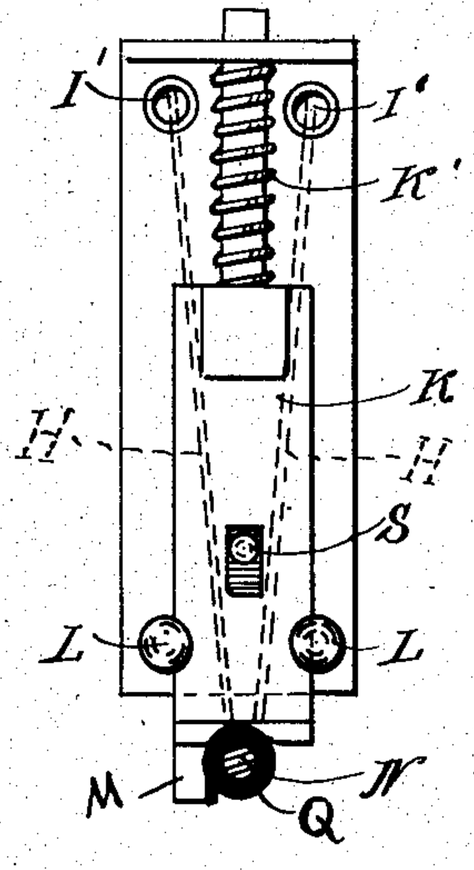

Fig. 5.

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UNITED STATES PATENT OFFICE.

ALEXANDER G. CHAMPLIN, OF GRAND RAPIDS, MICHIGAN, ASSIGNOR OF ONE-HALF TO FRANK A. SMITH, OF GRAND RAPIDS, MICHIGAN.

WIRE-WRAPPING MACHINE.

No. 824,171. Specification of Letters Patent. Patented June 26, 1906.

Application filed March 15, 1905. Serial No. 250,292.

To all whom it may concern:

Be it known that I, ALEXANDER G. CHAMPLIN, a citizen of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented new and useful Improvements in Wire-Wrapping Machines, of which the following is a specification.

This invention relates to new and useful improvements in devices for wrapping a wire with protecting or insulating cord or tape; and its object is to permit such wrapping to be accomplished efficiently and rapidly upon an endless wire—that is, without access to either end of the wire. This object I accomplish by the construction shown in the accompanying drawings, in which—

Figure 1 is a side elevation of the device resting upon the wire and in operation. Fig. 2 is a top view of the same. Fig. 3 is a longitudinal cross-section of the same in contact with a portion of the wire. Fig. 4 is a plan view from the bottom of the same part shown in Fig. 3 and resting upon the wire. Fig. 5 is an end plan of the plate and attached parts, taken from the left of Fig. 1; and Fig. 6 is a side elevation and section of the same parts shown by Fig. 5.

A is a cylindrical or other shell adapted to surround the wire. B is an interior core for this shell and upon which the shell A may revolve. The shell A carries at one end the beveled gear C. This shell is held in position upon its contained core at one end by the enlarged portion of the core B, forming a retaining-shoulder, and at the other end by the retaining-nut R, detachably secured to the central core. It is thus apparent that the shell A and the parts which it carries may be revolved upon the core B and will be firmly held in the proper revoluble position, but may be removed when desired by removing the nut R.

A longitudinal slot B′ is provided, extending through the shell A and approximately to the axis of the core B and gear C. It is evident that when the shell is in proper position the slot therein will register with the slot in the underlying core, and there will therefore be one continuous slot through which the entire device may be dropped upon the body of the endless wire, and the wire will thereupon occupy approximately the central axis of the core; but longitudinal sliding motion of the device upon the wire is not obstructed, nor is revolution of the shell and its attached parts prevented. This shell may be revolved in any convenient manner; but I have shown, for that purpose, permanently attached to the enlarged portion of the core, a beveled gear D and crank E. Obviously turning the crank E will cause the shell to revolve upon the interior core and wire.

For convenience in holding the device and moving the same I provide a depending handle O. (Shown in Figs. 1 and 2.) By constructing this handle of proper size and weight it will also serve as a balance to keep the device in its proper upright position on the wire.

I supply cord, tape, or other insulating or protecting material to the device from any suitable source. I have shown in the drawings for this purpose a double reel F F, both parts of which are journaled upon a transverse pin and one part of which serves as a proper counterbalance to the other part. Upon each of these reels is wound the insulating material H. The reels are prevented from too rapid rotation by friction-springs depending from cross-bars G G and retarding the revolution of the reels. If only one reel is used, it will be found convenient to provide some other suitable counterbalance. The pin which carries these reels is rigidly attached to the shell A and revolves therewith, so that as the device is in operation the reel carrying the winding material is being constantly revolved continuously in one direction around the wire.

Attached to the shell between the reel and the adjacent end of the device is the plate I, shown in its edge elevation in Fig. 6. This may be attached to the shell as desired. I have shown an attachment in Fig. 1 by an angle-plate P, screwed to both parts, but offset from the nut R, so as not to interfere with the revolution of the shell. The sliding plate K moves longitudinally of the plate I and is held in sliding contact therewith by a suitable opening in the upper bent portion of the plate I, which forms a guide for the upper portion of K and is further held in such sliding contact by the guides L L, which are attached to the plate I, but project out over the edges of plate K, permitting such sliding longitudinal motion. The upper part of sliding plate K is in the form of a post, as shown

in Figs. 5 and 6, and carries a tension-spring (shown in Fig. 5 by K′) in order to create an elastic downward pressure by plate K when the parts are in the position shown by Fig. 5. A central slot in the plate K engages a projecting pin S, attached to plate I, thereby limiting the motion of the sliding plate upon the fixed plate. The lower end of the sliding plate K is bent forward, as clearly shown in Figs. 1 and 2, so as to form a pressure-foot bearing under spring-tension against the wire N and held in constant contact or in constant tendency to contact therewith. From this plate and spring-pressure foot K, I provide a downwardly-projecting pin or lug M. (Shown in Figs. 1, 5, and 6.) This passes downwardly at one side of the wire and in approximate contact therewith.

I operate my device as follows: I first cause the slots in the shell and in the core to register. I then place the device upright upon the wire to be wrapped. I then thread the wrapping material from the reel through a suitable eye I′ in the plate I and downwardly through a suitable eye J in or at the side of the pressure-foot and then attach the end of the wrapping material to the wire. I then cause the shell and the parts which it carries to be revolved, and thereby the wrapping material is gradually unwound from the reel and is spirally wrapped around the wire. The action of the pressure-foot prevents the material from being wrapped upon itself and insures that the winding shall be spiral.

I may give the device longitudinal motion upon the wire by any desired feed; but I find that for ordinary purposes the action of the wrapping material itself under the tension of the spring-pressure foot and in connection with the depending lug M, which crowds the wrapping material as coiled back upon previous coils, and thereby moving the device forward upon the wire, constitutes a sufficient feed. If two strands are used, as shown in Fig. 2, a double wrapping will result, both strands being wound in the same direction.

Q indicates the insulating material which has been wound upon the wire. It is evident that by the construction shown the point of contact or winding of the insulating material upon the wire is in the revolving motion of the device always just ahead of the depending lug M and that this lug therefore makes contact continually with the end of the coil of insulating material just after its application to the wire. Thus the entire device will be constantly fed or carried to the right, as represented in Figs. 1 and 6, and the feed becomes automatic.

The slot in the core should be of approximately the same size as the wire which it is to receive, since if the slot was much larger than the wire, resulting in looseness or play, the operation would be injuriously affected. Since the core and the shell are made separable, it is evident that one core can be removed and another core containing a larger slot can be inserted if it is desired to wrap a larger wire, this adjustability being limited only by the size of the slot provided in the shell.

This device being adapted to be dropped upon the wire from above, it rests or rides upon the wire throughout its entire length, permitting an easier and more perfect feed than if it was hooked upon the wire from below at one or more points, and this feature of construction makes the heavy depending handle O, as well as in some cases the oppositely-disposed reels F F, serviceable as balances and counterbalances to assist in maintaining the device in position automatically, and thereby assisting in accomplishing the automatic feed.

I prefer to make the plate I adjustable with reference to the shell, as indicated in Fig. 1, so that I may better accommodate the device to different sizes of wire or thicknesses of wrapping material, although the action of the spring will effect such accommodation within certain limits.

By the use of this device I can wrap a wire for protection or insulation and with any common wrapping material and can do the same very rapidly, evenly, and firmly and without any cutting of the wire, applying the wrapping material at any desired point. The entire device is easily portable and can be used by linemen or repair men at any place and at any time.

Evidently the shape of the eyes through which the wrapping material passes and, to some extent, the shape of other parts in contact with the wrapping material should be accommodated to the shape and size of the wrapping material, whether the same be round or flat, large or small.

It is obvious also that the method of producing revolution, the method of carrying the wrapping material, and many other of the features shown are not essential to the operation of the device.

Having thus described my invention, what I claim to have invented, and desire to secure by Letters Patent of the United States, is—

1. In a wire-wrapping device, a central wire-contacting core, a revoluble shell surrounding such core, both core and shell provided with a longitudinal wire-receiving slot extending the entire length of the device, means for revolving the shell upon the core, means carried by the shell for supplying wrapping material and for leading the same to the wire, a pressure-foot carried by the revoluble shell, parallel with the wire, for preventing the material from winding upon itself, and a projection carried by the pressure-foot extending transversely to the wire and making contact with the wrapping ma-

terial at a point behind the point of applying the wrapping material to the wire, whereby the wrapping material is wound spirally upon the wire and the device is automatically fed along the wire.

2. In a wire-wrapping device, a central wire-contacting core, a revoluble shell surrounding such core, both core and shell provided with a longitudinal wire-receiving slot, means for revolving the shell upon the core, means carried by the shell for supplying wrapping material and for leading the same to the wire, a pressure-foot carried by the revoluble shell, parallel with the wire, for preventing the material from winding upon itself, and a projection carried by the pressure-foot extending transversely to the wire and making contact with the wrapping material at a point behind the point of applying the wrapping material to the wire, whereby the wrapping material is wound spirally upon the wire and the device is automatically fed along the wire.

3. In a wire-wrapping device, a central wire-contacting core having at one end an annular enlargement forming a retaining-shoulder, and having at the other end a projection forming a threaded bolt, a removable and revoluble shell surrounding said core, a retaining-nut upon such bolt projection, said shell provided with a longitudinal wire-receiving slot extending from one side approximately to the center of core, shell and nut, means for revolving the shell upon the core, means carried by the revoluble shell for supplying wrapping material, and means for guiding the wrapping material to the wire.

4. In a wire-wrapping device, a central wire-contacting core, a revoluble shell surrounding such core, both core and shell provided with a longitudinal wire-receiving slot extending the entire length of the device, means for revolving the shell upon the core, means carried by the shell for supplying wrapping material and for leading the same to the wire, a spring-actuated pressure-foot carried by the revoluble shell, resting upon the material which has been wound and extending over the point of winding, and a projection carried by the pressure-foot transverse to the wire, making contact with the wrapping material which has been wound and automatically feeding the device along the wire.

5. In a wire-wrapping device, a central wire-contacting core, a revoluble shell surrounding such core, both core and shell provided with a longitudinal wire-receiving slot extending the entire length of the device, means for revolving the shell upon the core, a reel-support carried by such revoluble shell, opposing reels mounted upon opposite ends of such support carrying each a separate supply of wire-wrapping material and counterbalancing each other, means for leading the wrapping material to the wire, a pressure-foot carried by the revoluble shell and parallel to the wire, and means whereby the winding of the wrapping material automatically feeds the device along the wire.

6. In a wire-wrapping device, a central wire-contacting core, a revoluble shell surrounding such core, both core and shell provided with a longitudinal wire-receiving slot extending the entire length of the device, means for revolving the shell upon the core, means carried by the shell for supplying wrapping material, a plate carried by the revoluble shell and provided with an eye for receiving and leading the wrapping material, means for adjusting such plate upon the shell to and from the wire, and means whereby the winding of the wrapping material automatically feeds the device along the wire.

7. In a wire-wrapping device, a central wire-contacting core, a revoluble shell surrounding such core, both core and shell provided with a longitudinal wire-receiving slot extending the entire length of the device, means for revolving the shell upon the core, means carried by the shell for supplying wrapping material, a plate carried by the revoluble shell and provided with an eye for receiving and leading the wrapping material, a spring-actuated pressure-foot slidably attached to said plate, an eye in said pressure-foot for leading the wrapping material, and a projection making constant edge contact with the coil of material wrapped upon the wire, whereby said material is spirally wound and the device is automatically fed along the wire.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ALEXANDER G. CHAMPLIN.

Witnesses:
MARY S. TOOKER,
CHARLES M. WILSON.