(No Model.) 2 Sheets—Sheet 1.

M. V. PALMER.

MACHINE FOR WINDING COPS FOR SEWING MACHINE SHUTTLES.

No. 368,897. Patented Aug. 23, 1887.

Fig. 1

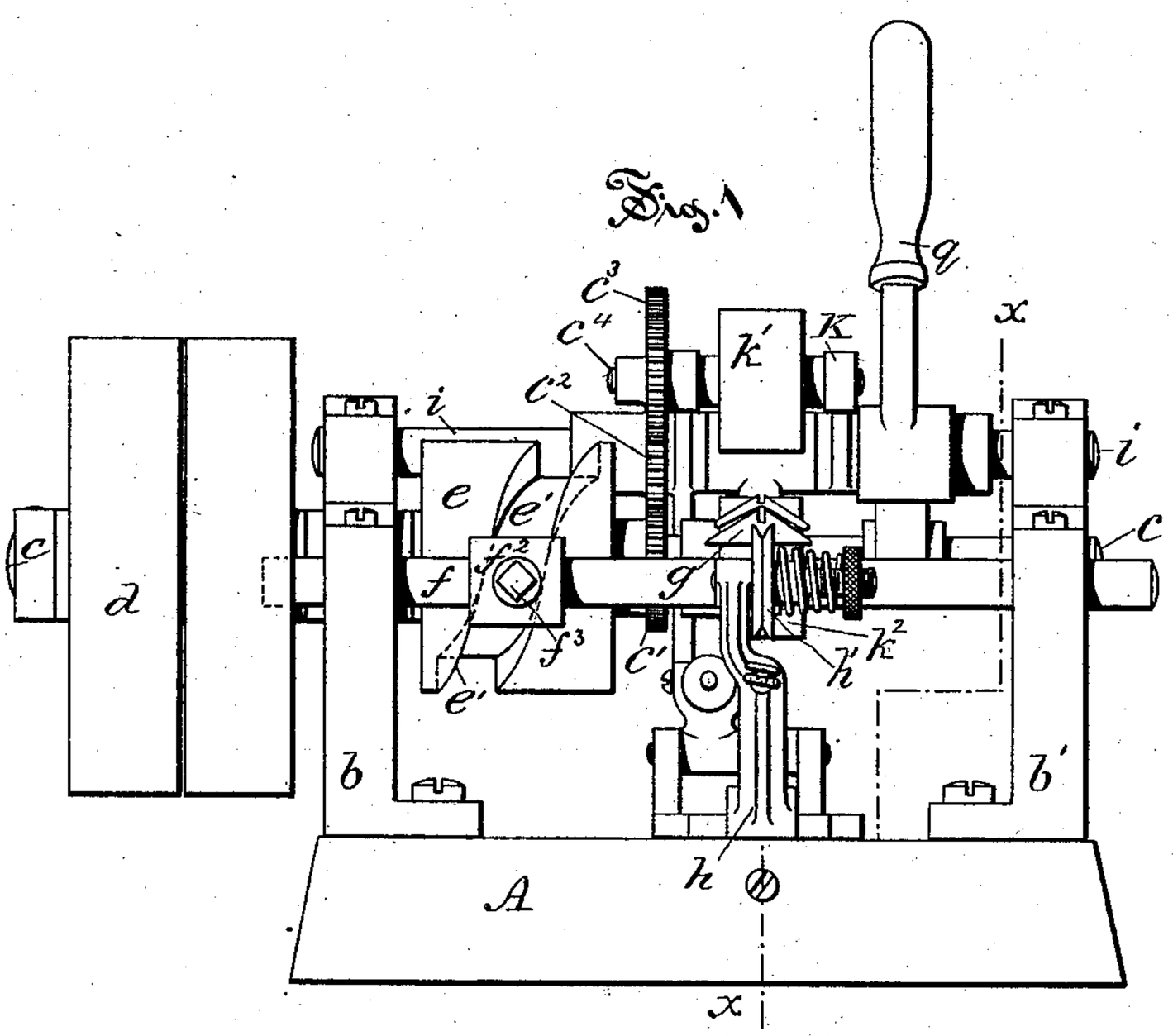


Fig. 2

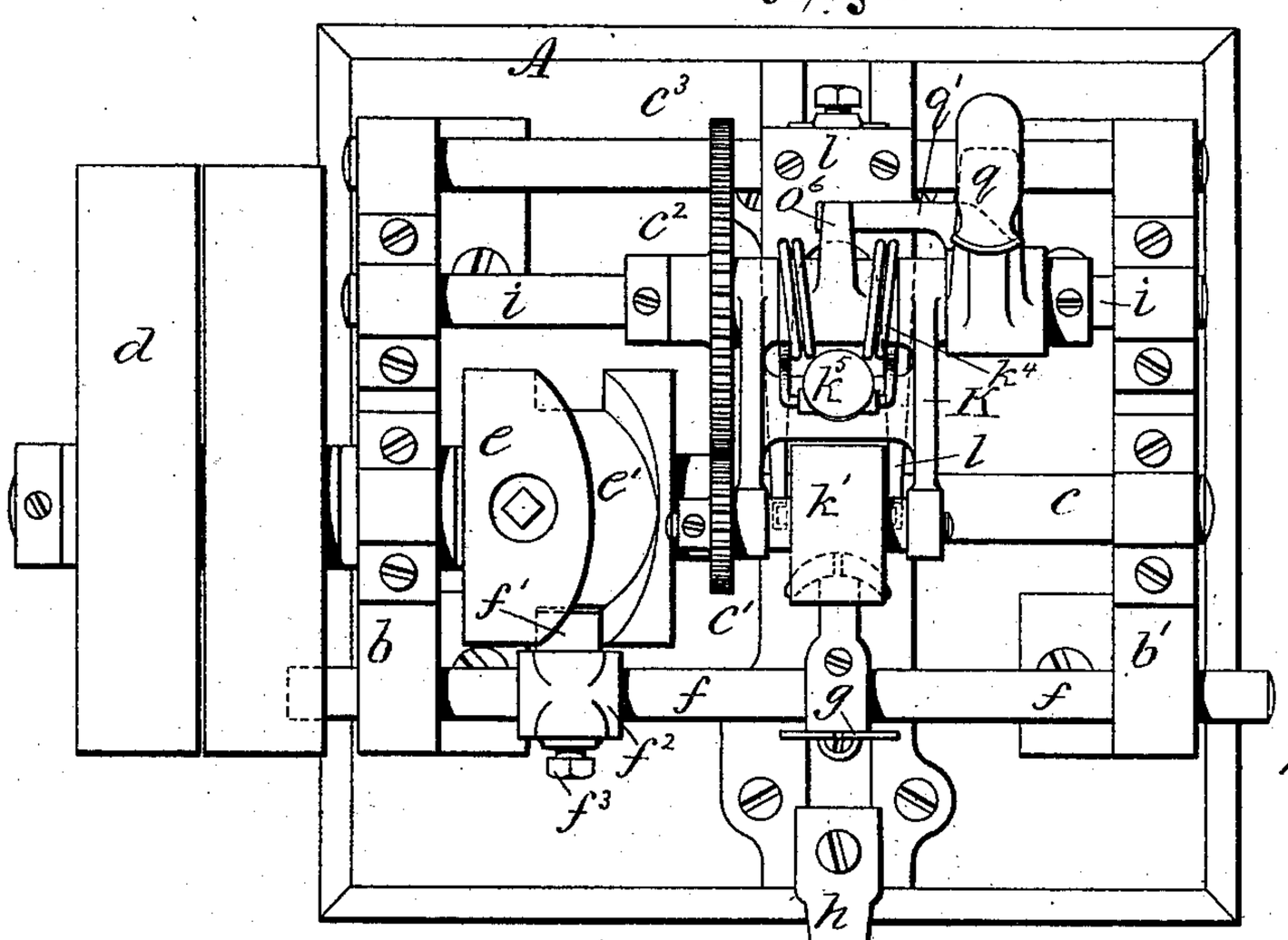
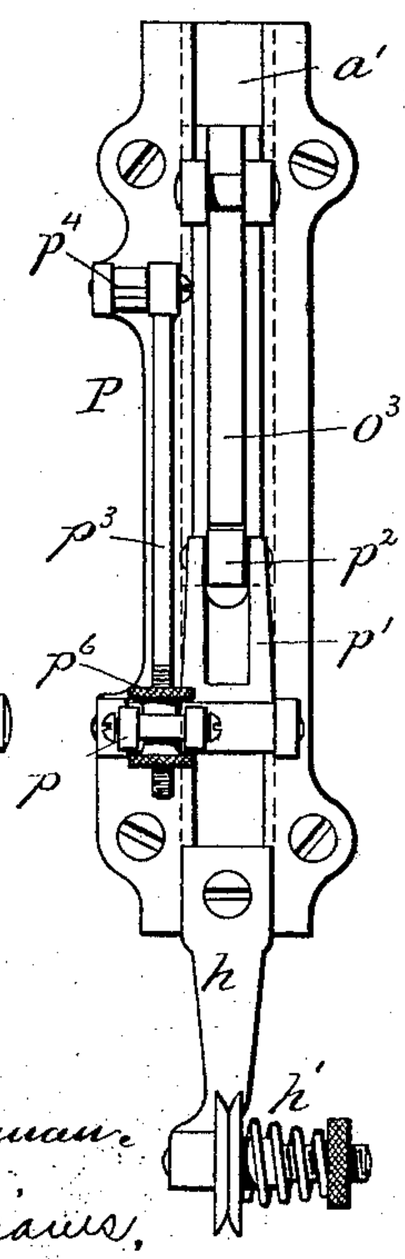


Fig. 3



Inventor:
Maro V. Palmer
by Simonds & Burdett,
attys.

Witnesses:
Wm. Byerkman.
H. R. Williams.

(No Model.) 2 Sheets—Sheet 2.

M. V. PALMER.

MACHINE FOR WINDING COPS FOR SEWING MACHINE SHUTTLES.

No. 368,897. Patented Aug. 23, 1887.

Fig. 4

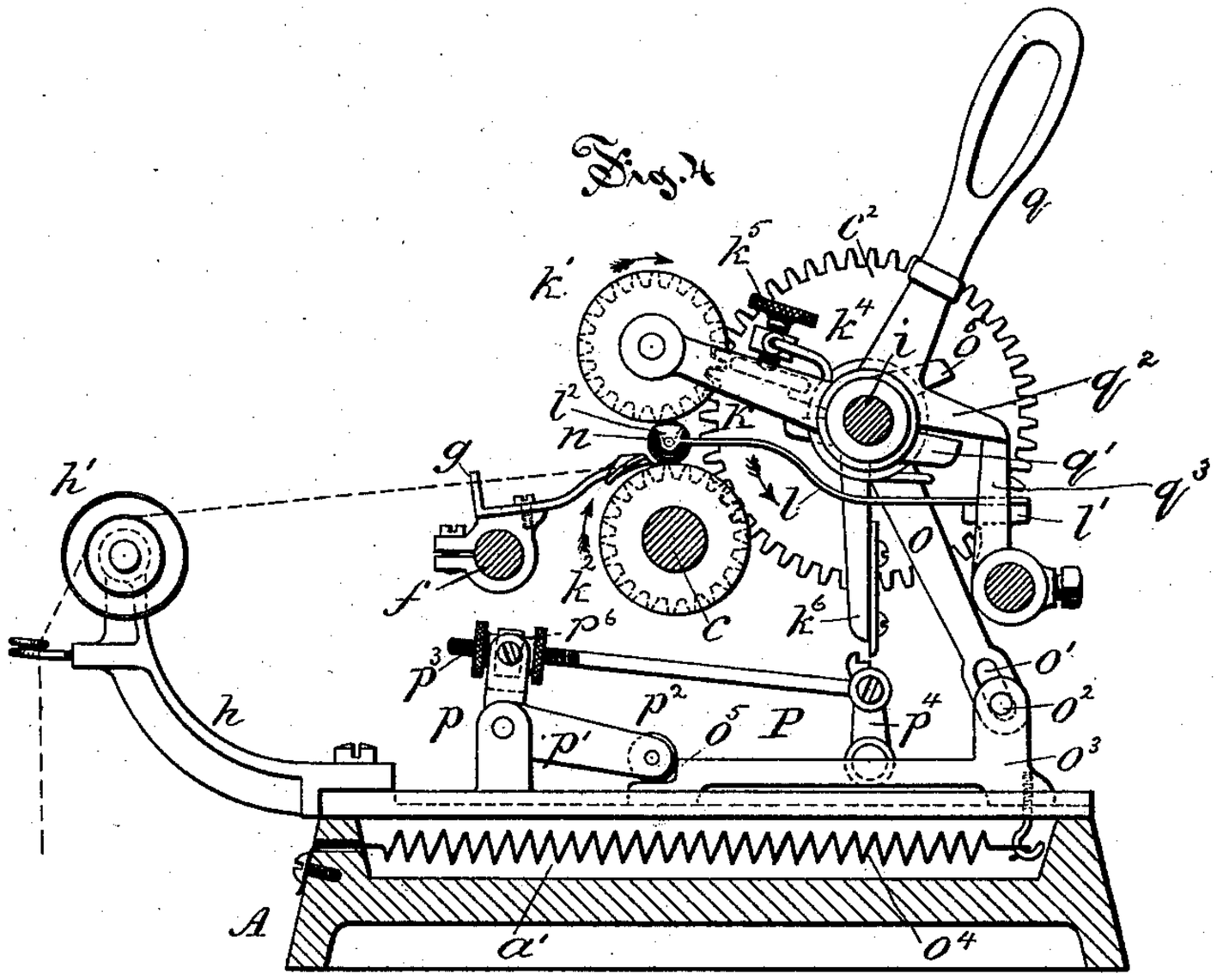


Fig. 5

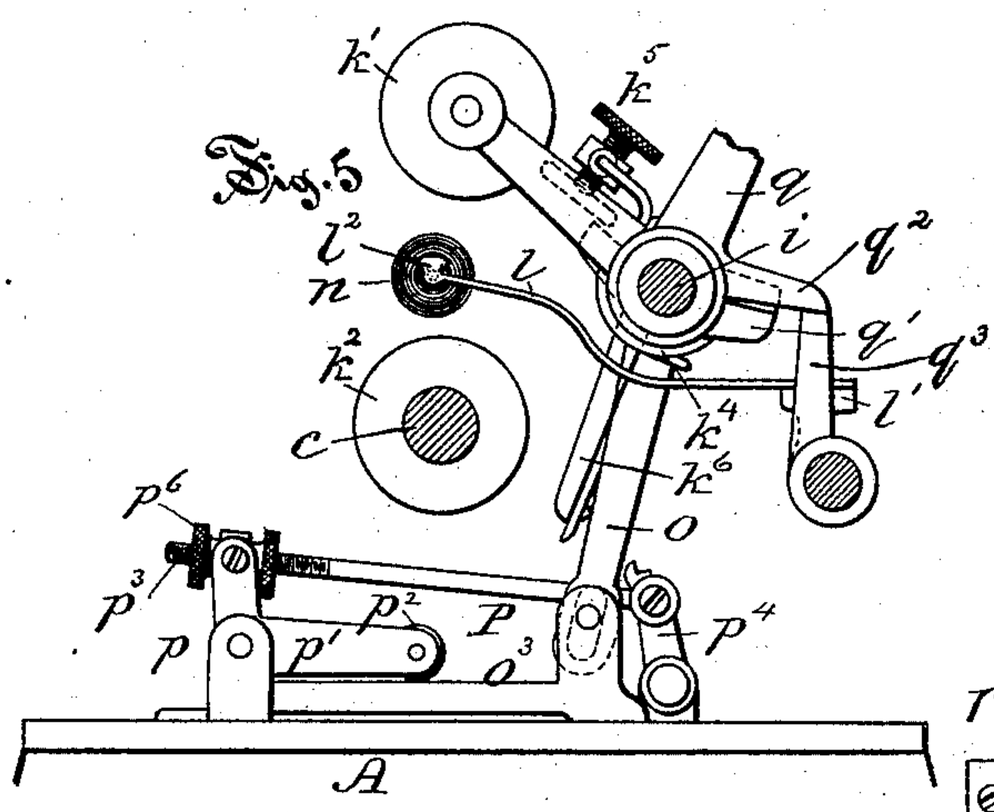
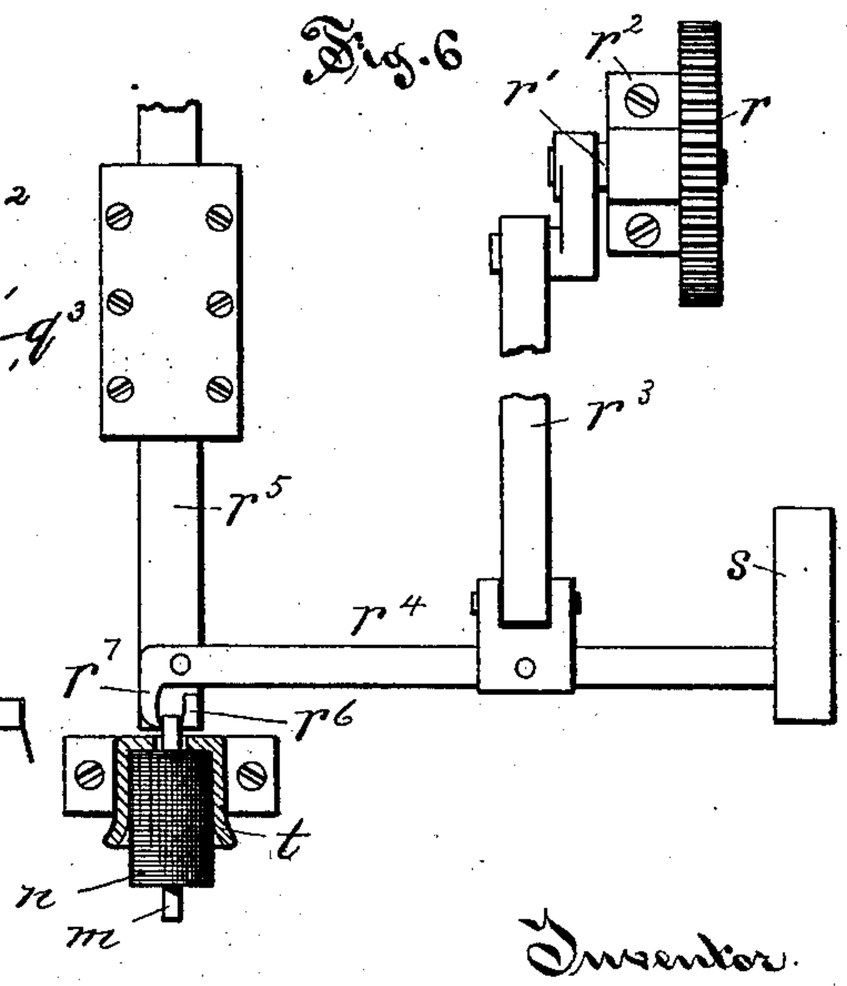


Fig. 6



Witnesses:

Wm. Bojorkman

K. R. Williams.

Inventor.

Mario V. Palmer

by Simonds & Burdett,

Attys.

UNITED STATES PATENT OFFICE.

MARO V. PALMER, OF WILLIMANTIC, CONNECTICUT.

MACHINE FOR WINDING COPS FOR SEWING-MACHINE SHUTTLES.

SPECIFICATION forming part of Letters Patent No. 368,897, dated August 23, 1887.

Application filed November 8, 1886. Serial No. 218,328. (No model.)

To all whom it may concern:

Be it known that I, MARO V. PALMER, of Willimantic, in the county of Windham and State of Connecticut, have invented certain new and useful Improvements in Machines for Winding Cops for Sewing-Machine Shuttles, of which the following is a full, clear, and exact description, whereby any one skilled in the art can make and use the same.

The object of my invention is to provide a machine by means of which a peculiar cop may be wound compactly and evenly to adapt it for use in the shuttle of a sewing-machine.

To this end my improvement consists in the combination of devices whereby the cop is wound between the faces of rollers running at substantially the same velocity.

It further consists in the combination of the spring-seated bearings that support the pin on which the cop is wound under pressure between the rollers.

It further consists in the stop device, in the adjusting device that determines the diameter of the cop, in the combination of devices for pulling out the pin, and in further details of the parts and their combination, as more particularly hereinafter described, and pointed out in the claims.

Referring to the drawings, Figure 1 is a front view of one of my improved machines for winding shuttle-cops. Fig. 2 is a top view of the same. Fig. 3 is a detail top view of the trip device and of the adjusting device. Fig. 4 is a view in vertical cross-section of the device on plane denoted by line *x x* of Fig. 1. Fig. 5 is a detail view in vertical section of the machine on the same plane, showing the parts in position after tripping the upper roller. Fig. 6 is a detail top view of the device for pulling the pin out of the cop.

In the accompanying drawings, the letter A denotes the frame or bed of the machine. *b* and *b'* denote standards; *c*, the main shaft extending across the machine and supported in bearings in the standards; *d*, a pulley to receive a belt, by means of which the machine may be driven from any convenient countershaft or source of power. Fast to this main shaft *c* is a cam-block, *e*, having a cam-groove, *e'*, into which projects a pin, *f'*, borne on a block, f^2, adjustably secured to the sliding rod *f*, as by means of a clamp-screw, f^3. On this reciprocating rod are supported the guides *g*, through which the thread passes while being wound to form a cop.

The device just described is the ordinary traverse device common to other winding-machines, and the guides are also of well-known construction.

The thread passes to the guides through the tension device *h'* on the upper end of the arm *h*, fast to the frame of the machine. On the main shaft *c* there is also fast a cog-wheel, *c'*, meshing into a larger cog-wheel, c^2, that is supported on an arbor, *i*, held in the standards *b b'* and extending across the frame parallel to the main shaft. The wheel c^2 turns freely on this arbor and meshes into a gear-wheel, c^3, that is fast to the shaft c^4 of the roller k', that is supported in bearings on the outer end of the frame K. This roller-frame is supported by and swings freely on the arbor *i*, holding the roll k' at the lower limit of its play directly over the roll k^2, that is fast to the same shaft as the cog-wheel *c'* and is driven by it. The arrangement of cog-wheels just described is such that the adjacent faces of the two rolls k' k^2 travel in opposite directions. The front ends of the arms of the spring *l*, that is supported on the standard *l'* on the back of the frame, lie between the planes of the upper and lower rollers, k' k^2, and are formed with the bearings l^2 for a small pin, *m*, on which the cop *n* is wound, and this pin is held in its bearings directly between the surfaces of the rolls k' k^2.

In Fig. 5 I have shown the rolls and pin-bearings in the positions they are caused to assume when it is desired to remove a wound cop or to place a pin within the bearings, the upper roll, k', being shown held above and out of contact with the cop or pin, which latter is in turn held out of contact with the roll k^2, these parts occupying the relative positions shown. After removing a wound cop and placing a base-pin in the bearings, by pulling forward upon the handle *q*, the frame K is so moved as to hold the pin with a yielding pressure upon the lower roll and between the surfaces of the two rolls. The upper roller, k', is thrust downward with a yielding pressure upon this pin by means of a spring, k^4, that is coiled about the hub of the arm *o*, that is also supported on the arbor *i*. One end or loop of

this spring supports an adjusting-screw, k^5, by means of which the degree of pressure of the spring upon the frame K may be adjusted, while another loop of the spring passes around the back of the arm *o* in such manner that the tension of the spring tends to rotate the frame and the arm in opposite directions on the arbor *i*. The lower end of this arm *o* has a slot, *o'*, through which passes a pin, o^2, by means of which it is connected to a slide, o^3, moving in guideways across the frame A. In a socket, *a'*, in the upper part of the frame is seated a spring, o^4, with one end fast to the front part of the frame and the other to a hook fast to the slide, the function of the spring being to pull the slide forward. This slide forms part of the trip device P, the function of which is to lift the upper roller, *k'*, out of contact with the cop *n* as soon as it has reached the predetermined diameter, and this lifting of the upper roller allows the spring *l* to lift the cop out of contact also with the lower roller and stops the further winding of any thread upon the cop.

The bell-crank lever *p* (see Figs. 4 and 5) is pivotally connected to a stand on the front of the frame, with one arm, *p'*, extending toward the slide o^3, and bearing a roller, p^2, adapted to rest against the shoulder or angle o^5 on the front of the slide. The upper arm of this bell-crank lever *p* is connected by means of the rod p^3 with the dog p^4, that is pivoted to the upper part of the bed or frame A, and projects upward, with its outer end arranged to come into contact with the arm k^6, that projects downward from the hub of the frame K. By means of the adjusting-nuts p^6 the point at which the upper end of the dog and the lower end of the arm k^6 slip past each other may be determined.

In order to return the frame K and the roller *k'* to the lower limit of their play, the handle *q* is pivotally supported on the arbor *i* and is provided with a sidewise-extending arm, *q'*, that by contact with the arm o^6, that projects from the hub of the arm *o*, causes, when this handle is pulled forward, the arm *o* to be pulled backward, and the tension of the spring k^4 forces the frame downward. Another arm, q^2, projecting from the hub of the handle, serves by contact with a post or standard, q^3, fast to the frame, to limit the backward play of the handle.

The operation of my device is as follows: A pin, *m*, having been placed in the bearings in the front end of the spring-arm, the roller *k'* is, by the means already described, brought down upon it and held there by the pressure determined by the spring k^4, the pin being held between the adjacent surfaces of the rolls *k'* and k^2. The end of the thread is caught on the pin, and by the rotation of the main shaft *c* is wound upon it, the traverse motion of the thread being imparted by the reciprocating motion of the slide-rod and under pressure between the two rolls, so that the thread is massed evenly and closely upon the pin. This winding of the thread upon the pin continues until the cop has reached the desired diameter, and the end of the arm k^6 forces the end of the dog over, tilting the lever and lifting the roller p^2 out of contact with the shoulder o^5 on the slide. The slide is then pulled sharply forward by means of the spring o^4, and the upper roller lifted out of contact with the cop and further winding of thread stopped. The thread is then cut close to the cop and the latter removed from the spring-supported bearings. The pin *m*, upon which the cop is wound, still remains in it, and to pull it out I make use of the pull-out device R. (Shown in Fig. 6 of the drawings.) A cog-wheel, *r*, is borne on a shaft, *r'*, mounted in a standard, r^2, fast to the frame, in such position that the wheel meshes with and is driven by the large gear-wheel c^2. A crank-arm on the shaft *r'* is connected by a pitman, r^3, to the lever r^4, that lies crosswise of the pitman and is supported at one end in a groove in the stand *s*, and at the other is pivoted to the front end of the slide r^5, that lies about parallel to the path of the pitman. On the front end of the slide r^5 a jaw, r^6, is located opposite to the outward-bent end of the lever r^4, which end forms the complementary jaw r^7, and between these jaws the end of the pin *m* is grasped at the instant the pitman begins its return movement, its pull on the lever closing the jaws, while the push of the pitman opens the jaws.

One end of the cop is held against the end of the rest *t* with the end of the pin projecting toward the jaws and adapted to be grasped by them, as described.

I claim as my invention—

1. In combination with the spring-supported bearings of the cop-pin, the winding-rolls arranged upon opposite sides of the pin-bearings, and the within-described means for actuating the winding-rolls, whereby thread is wound upon said pin, all substantially as described.

2. In combination with the cop-pin bearings, the winding-rolls arranged upon opposite sides of the pin-bearings, and one of the same movable toward and from the other, and the within-described means for actuating the rolls, pressing the movable roll against the other, and raising the said movable roll, all substantially as described.

3. In combination with the cop-pin bearings, the winding-rolls located on opposite sides thereof, means for actuating said rolls, and the spring whereby one of the rolls is pressed toward the other and upon the cop-pin mounted in bearings with a yielding force in winding the cop, all substantially as described.

4. In combination with the separable winding-rolls and the within-described means for actuating them, the spring-arm formed with the cop-pin bearings, whereby the said pin is held normally out of contact with the two rolls when the latter are separated, all substantially as described.

5. In combination with the separable winding-rolls and their within-described actuating mechanism, the cop-pin bearings and the automatic stop device whereby the rolls are separated when the proper amount of thread has been wound, all substantially as described.

6. In combination with the spring having the pin-supporting sockets, the winding-rolls arranged upon opposite sides of the pin, the within-described means for actuating the said rolls, the spring whereby the rolls are pressed toward each other in winding the cop, and the automatic stop device whereby the rolls are removed from contact with the cop, all substantially as described.

7. In combination with the frame A, the standards *b b'*, the gear-wheels *c' c² c³*, with their respective shafts, the swinging roll-frame K, the roll *k'* carried thereby, the lower winding-roll, *k²*, the cop-pin spring *l*, with the bearings *l²*, adapted to hold the bobbin-pin between the faces of the rolls, the arm *o*, the spring *k⁴*, the adjusting-screw *k⁵*, and the within-described automatic stop device, all substantially as described.

8. In combination with the frame K, the separable rolls *k' k²*, the arm *o*, the spring *k⁴*, whereby the frame K and the arm are elastically connected, the slide *o³*, the slide-spring *o⁴*, and the trip device P, all substantially as described.

9. In combination with the frame K, the separable rolls *k' k²*, and the within-described driving mechanism, the cop-pin bearings, the arm *o*, the spring *k⁴*, connecting the frame K and the arm *o*, the slide *o³* and its spring *o⁴*, the trip device P, and the handle *q*, whereby the winding-roll *k'* is brought into contact with the cop-pin, all substantially as described.

10. In combination with the separable rolls *k' k²* and the within-described driving mechanism, the roll-supporting frame K, having arm *k⁶*, the arm *o*, the spring *k⁴*, appurtenant to the frame *o* and frame K, the slide *o³*, connected to the said arm, the slide-spring *o⁴*, the lever *p* of the trip device, with its arm *p'*, bearing a roll, *p²*, adapted to make contact with the shoulder *o⁵* on the slide, the adjustable connecting-rod *p³*, and the dog *p⁴*, all substantially as described.

11. In combination with the pitman *r³* and its actuating mechanism, the lever *r⁴*, pivotally connected to the end of the pitman and arranged crosswise of its path, the reciprocating slide *r⁵*, bearing a jaw, *r⁶*, and pivotally connected to the bent end of the lever *r⁴*, that bears the complementary jaw *r⁷*, and the rest *t*, adapted to support the bobbin with the projecting pin in the path of the jaws, all substantially as described.

MARO V. PALMER.

Witnesses:
CHAS. L. BURDETT,
H. R. WILLIAMS.