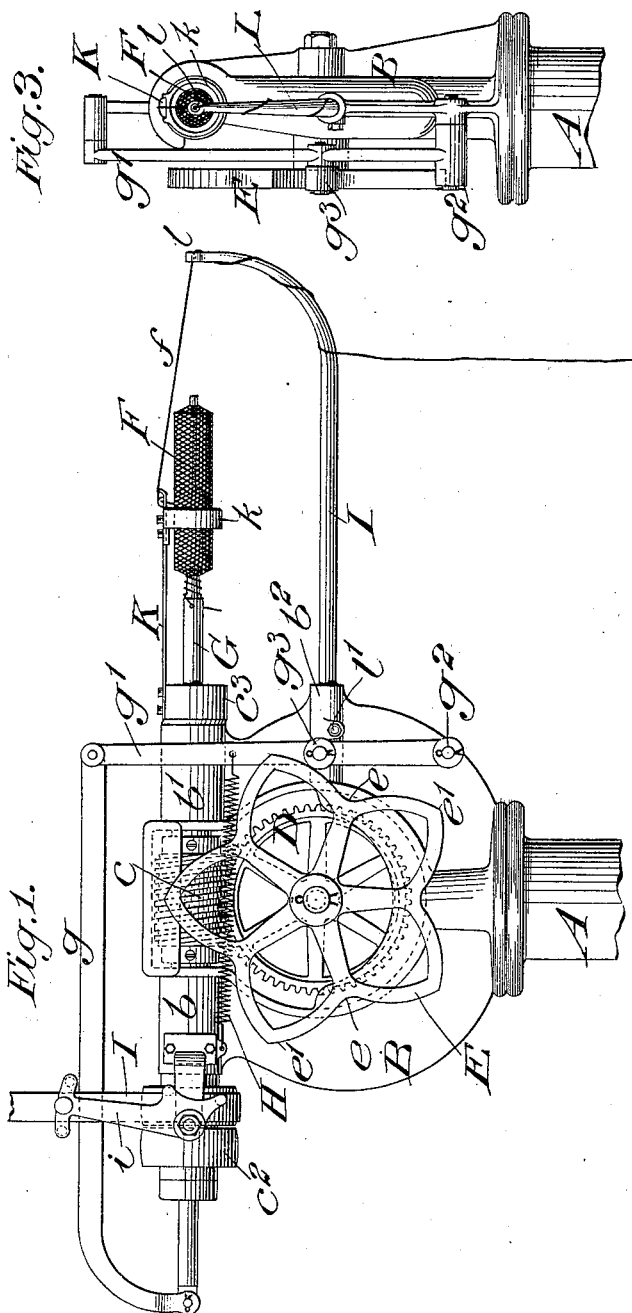


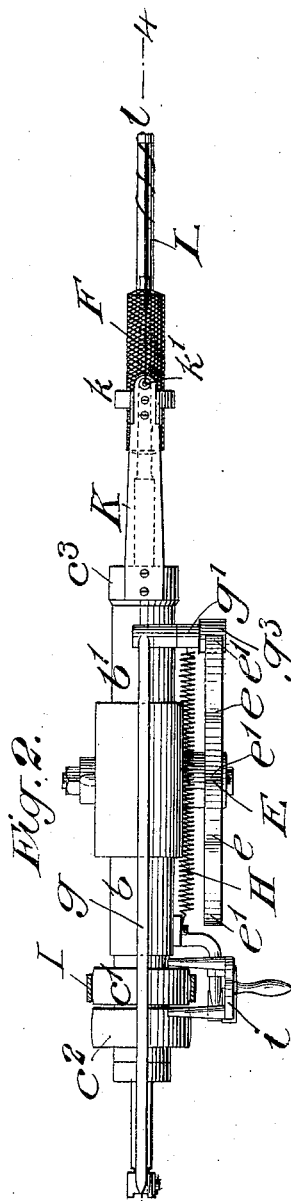
V. ROYLE.
COP WINDING MACHINE.
(Application filed Dec. 23, 1897.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:
George Barry Jr.
Edward Viesel.



Inventor:
V. Royle
By *Attorney* *Wm. H. Howard*

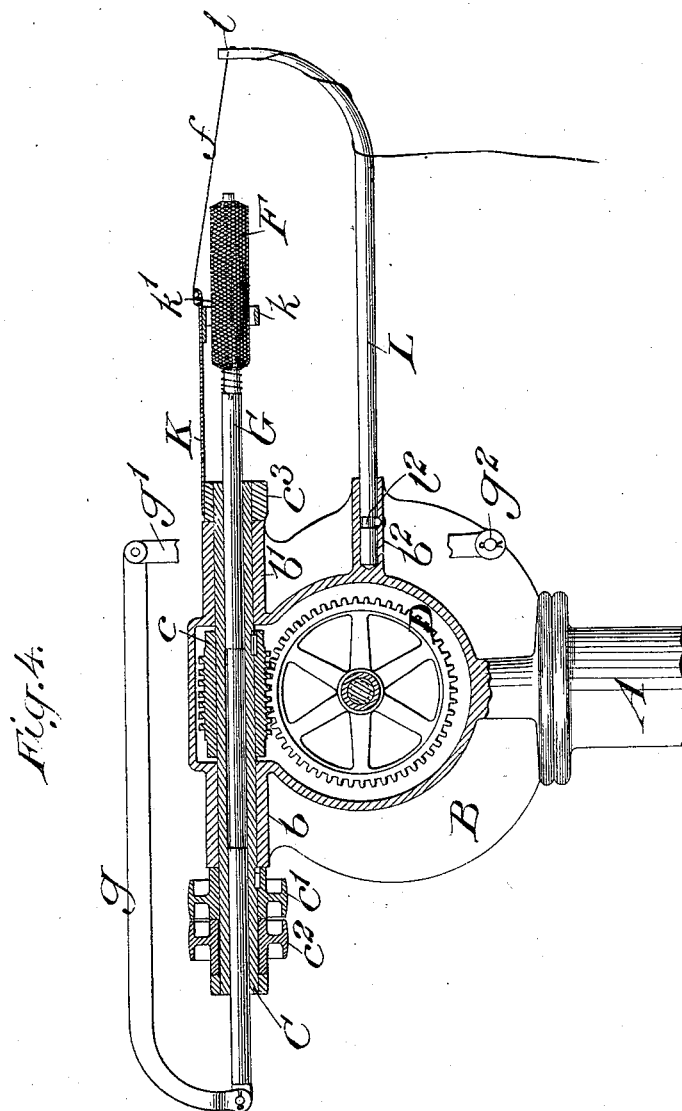
No. 648,134.

Patented Apr. 24, 1900.

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COP WINDING MACHINE.
(Application filed Dec. 23, 1897.)

(No Model.)

2 Sheets—Sheet 2



Witnesses:

George Barry Jr.
Edward Vieser.

Inventor:

Vernon Royle
By attorneys
Merrill & Co.

UNITED STATES PATENT OFFICE.

VERNON ROYLE, OF PATERSON, NEW JERSEY.

COP-WINDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 648,134, dated April 24, 1900.

Application filed December 23, 1897. Serial No. 663,142. (No model.)

To all whom it may concern:

Be it known that I, VERNON ROYLE, of Paterson, in the county of Passaic and State of New Jersey, have invented a new and useful Improvement in Cop-Winding Machines, of which the following is a specification.

My invention relates to a cop-winding machine, and more particularly to a machine for winding cops of cord for use in a jacquard card-sewing machine. It is desirable that the cord be unwound from the center and that it shall be so wound as to render freely when drawn from the center, and to this end I provide for a spiral wind in which the coils are a considerable distance apart and alternately reversed as they extend back and forth from end to end of the cop.

In the accompanying drawings, Figure 1 is a view of the machine in side elevation, the base of the support being omitted. Fig. 2 is a top plan view. Fig. 3 is an end view, and Fig. 4 is a longitudinal vertical section along the line 4 4 of Fig. 2.

The support for the machine is denoted by A and is conveniently made in the form of a hollow pillar. The base of the pillar is not herein shown, but may be extended laterally and provided with a suitable flange for securing it in position in any well-known or approved manner.

On the pillar A there is fixed a hollow casing B, which serves as a housing for some of the operative parts and a support for all of said parts.

The housing B is developed at its top into extended bearings $b\ b'$ for the spindle-operating sleeve C, a portion of the housing B being cut away at its top for the reception of a worm c , fixed to rotate with the sleeve C and engaged with a worm-wheel D, mounted within the housing B and having fixed to rotate therewith a cam-wheel E.

The spindle, on the free end of which the cop F is to be wound, is denoted by G and extends longitudinally within the sleeve C, the end opposite that on which the cop is to be wound having secured thereto a link g , connecting the end of the spindle with the free end of a rocking arm g' , fulcrumed at g^2 to the housing B and carrying a roller g^3 , with which the cam E engages for rocking the arm g' , and hence sliding the spindle G in one di-

rection against the tension of the retracting-spring H, the said retracting-spring H, by its connection with the housing B and with the arm g' , serving to slide the spindle G in the opposite direction.

The cam E is provided in the present instance with five projections, equally distant apart along its periphery, which projections as the cam is rotated serve to advance the spindle G five times during a revolution of the worm-wheel D and cam E, the retracting-spring H serving to return the spindle as far as permitted by the depressions e intermediate of the projections e' on the cam.

The sleeve C has a drive-pulley c' fixed to rotate therewith and a loose pulley c^2 mounted thereon, the two pulleys being arranged to receive a drive-belt I, leading to a source of power (not shown) and subject to a belt-shifter i to be thrown onto the drive or idle pulley at the pleasure of the operator. The sleeve C has also fixed therein a collar c^3 , from which an arm K extends along the spindle to a point opposite the part on which the cop is to be wound, at which point the said arm is provided with a ring or loop k , occupying a position concentric with the axis of the spindle G and of an interior diameter equal to the desired transverse diameter of the cop. The ring or loop k serves to stop the winding action, and hence determine the size of the cop, by the frictional contact of its interior surface with the exterior of the wound cop, the resistance being sufficient to arrest the rotary movement of the sleeve C and cause the belt to slip on the drive-pulley c' until shifted onto the loose or idle pulley c^2 by the operator. This structure places the rotary part—in the present instance the sleeve G—directly under the control of the wound cop and friction device—in the present instance the ring or loop k —to be arrested as distinguished from structures where there is an intermediate trip mechanism or its equivalent for transmitting the effect of the wound cop indirectly to the driving mechanism to stop the movement.

A guide-arm L is seated at one end in a socket b^2 in the housing B and extends to a point in axial alinement with the spindle G, where it is provided with an eye l for the passage of the cord f from a supply (not

shown) to an eye k' on the ring or loop k , whence it passes to the spindle. The arm L is preferably held in its socket b^2 by a dowel-pin or screw l' , extending through the wall of the socket b^2 and into an annular groove l^2 in the arm L , permitting the latter to rock in its bearing, while held against longitudinal movement therein.

In operation, the end of the cord f having been threaded in the spindle, the sleeve G is set rotating, carrying the cord around the spindle and winding it thereon. The rotation of the sleeve C actuates the worm-wheel D by means of the worm c , and hence the cam-wheel E , thereby imparting to the spindle a reciprocating movement in a longitudinal direction during the winding and thereby laying the cord in reverse spirals to form the cop. As the transverse diameter of the cop approaches a length equal to the diameter of the interior of the ring or loop k the rotary movement of the latter will be gradually impeded and finally stopped, the drive-belt stopping on the drive-pulley until relieved.

The machine is a very simple and compact one and serves its purpose well.

What I claim is—

1. The combination with a spindle, a guide for directing the cord to the spindle and means for rotating one of the parts relatively to the other, of a friction device in position to engage the wound cop when it reaches a predetermined size, the said rotary part being directly under the control of the wound cop and friction device to be arrested in its rotary movement by the frictional pressure between the cop and friction device, substantially as set forth.

2. In combination, a spindle, a guide at the

side of the spindle for directing the cord to the spindle, a ring or hoop surrounding the spindle at the portion where the cop is to be wound and serving to determine the size of the cop, and means for rotating one of the parts, relatively to the other to wind the cop, substantially as set forth.

3. In combination a suitable support, a sleeve mounted in the support, a spindle mounted in the sleeve, means for rotating one of the parts, means under the control of the rotary part for imparting a longitudinally-reciprocating movement to the other part and a guide carried by one of the parts for directing the cord to the spindle, substantially as set forth.

4. In combination, a suitable support, a sleeve mounted to rotate therein, a worm carried by the sleeve, a spindle mounted in the sleeve, a worm-wheel in engagement with the worm, a cam-wheel fixed to rotate with the worm-wheel, a vibrating arm under the control of the cam-wheel, a connection between the vibrating arm and spindle and a guide carried by the rotary sleeve for directing the cord to the spindle, substantially as set forth.

5. In combination, a hollow support, a sleeve mounted therein, and provided with a worm, a worm-wheel mounted within the support, a cam-wheel fixed to rotate with the worm-wheel, a spindle within the sleeve, means for rotating the sleeve, means for reciprocating the spindle within the sleeve and means carried by the sleeve for directing the cord to the spindle, substantially as set forth.

VERNON ROYLE.

Witnesses:

FREDK. HAYNES,
EDWARD VIESER.