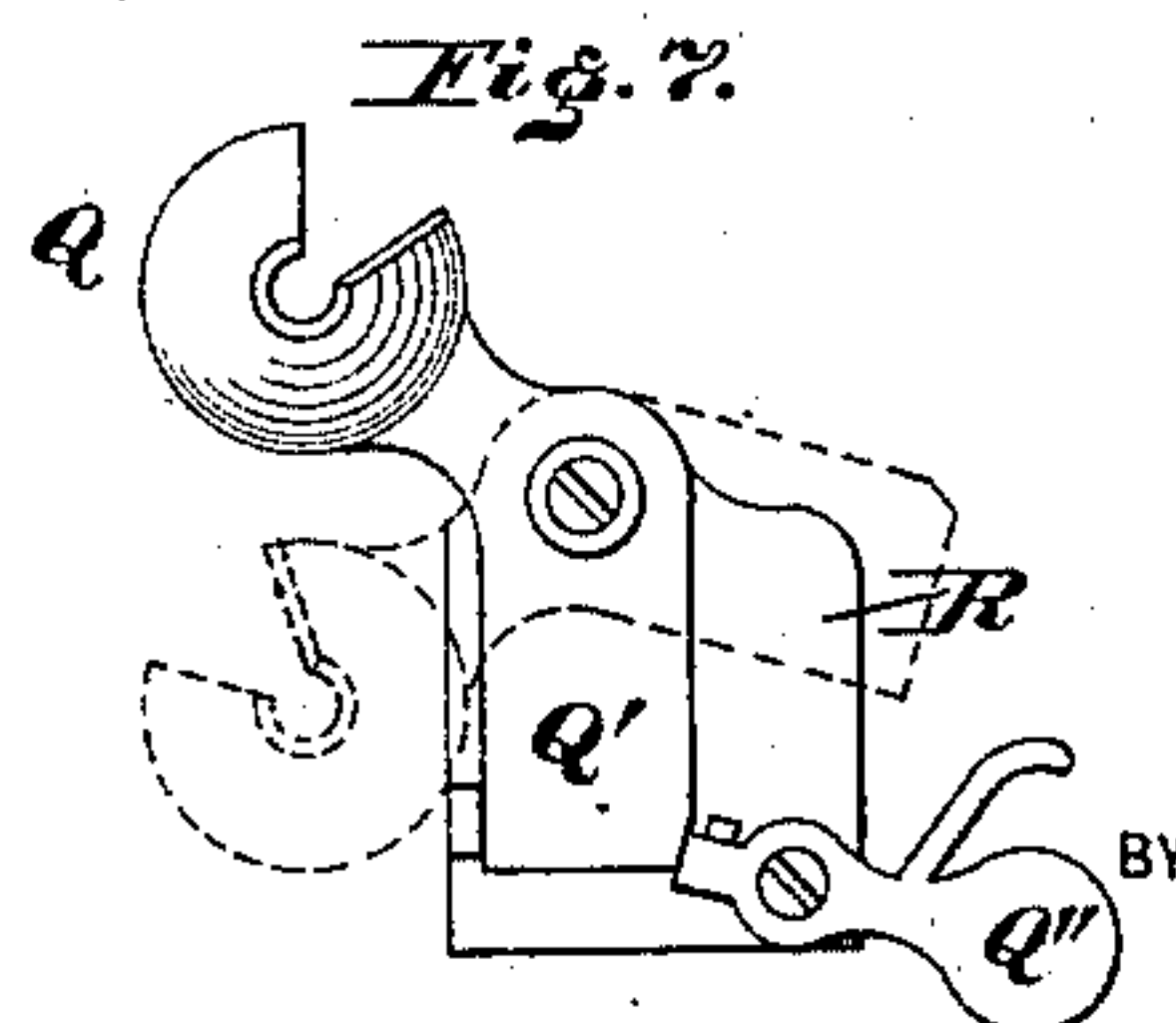
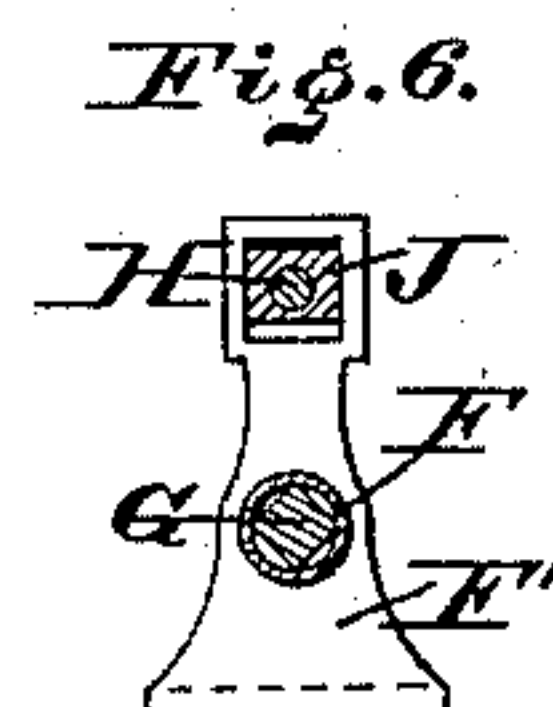
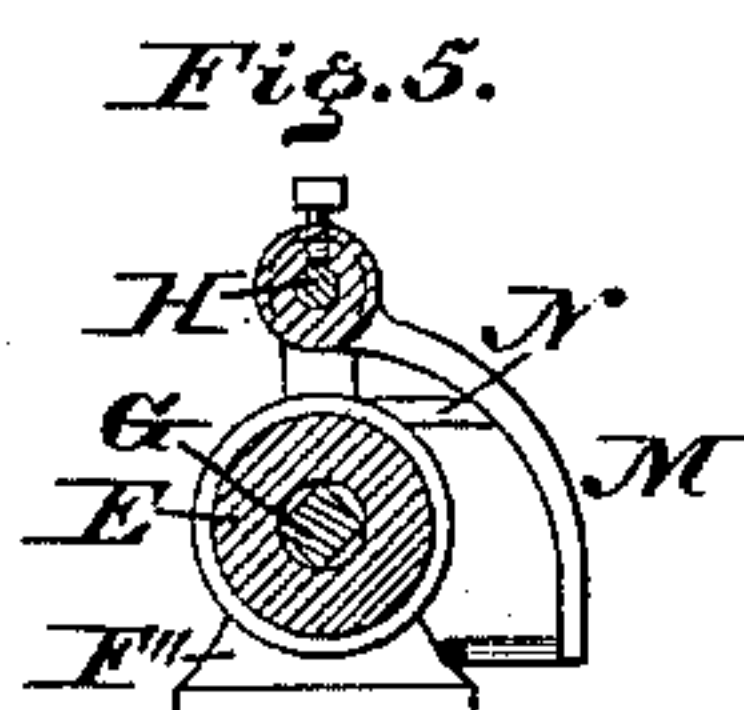
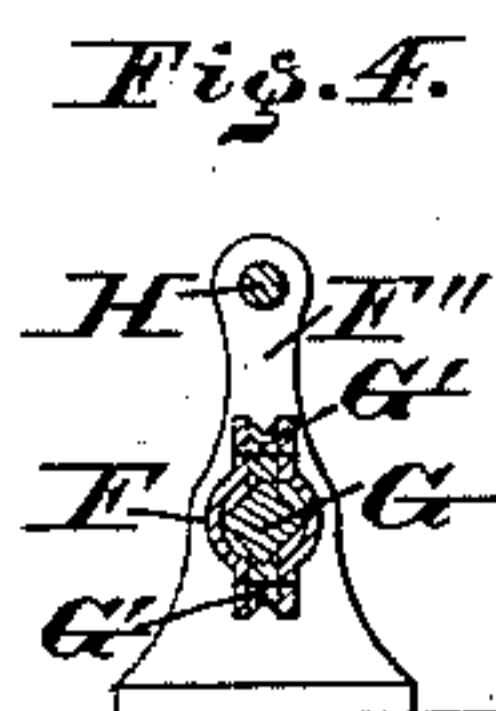
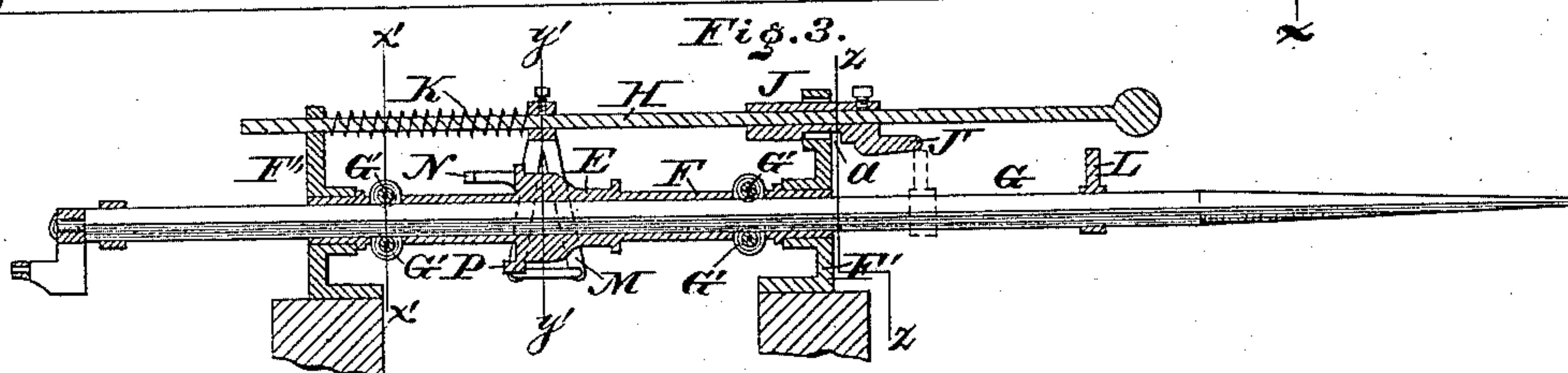


O. LEVER & W. S. GRUNDY.

No. 306,023.

Patented Sept. 30, 1884.



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UNITED STATES PATENT OFFICE.

OSWALD LEVER AND WILLIAM S. GRUNDY, OF PHILADELPHIA, PA.

COP-WINDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 306,023, dated September 30, 1884.

Application filed June 14, 1883. (No model.)

To all whom it may concern:

Be it known that we, OSWALD LEVER and WILLIAM S. GRUNDY, both of the city and county of Philadelphia, State of Pennsylvania, subjects of the Queen of Great Britain, having resided one year last past within the United States and made oath of intentions to become citizens thereof, have invented a new and useful Improvement in Cop-Winding Machines, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a transverse vertical section in line *x x*, Fig. 2, of a cop-winding machine embodying our invention. Fig. 2 is a longitudinal vertical section of a portion thereof in line *y y*, Fig. 1. Fig. 3 is a sectional view of a portion of the upper part of Fig. 1 enlarged. Figs. 4, 5, and 6 are vertical sections of a portion of Fig. 3, respectively in lines *x' x'*, *y' y'*, and *z z*. Fig. 7 is an end view, enlarged, of the cup of the machine and connected parts. Fig. 8 is a top view of the cup and connected parts on the scale Fig. 1.

Similar letters of reference indicate corresponding parts in the several figures.

Our invention consists of a cop-winding machine having certain automatically-operated devices and other features, as will be hereinafter fully set forth, and specifically pointed out in the claims.

Referring to the drawings, A represents the frame of the machine, and B represents the driving-shaft, which carries the pulley C, around which passes a belt or band, D, the latter also passing around a pulley, E, which is formed with or secured to a horizontally-arranged sleeve, F, which is mounted in standards F' F'' at the top of the frame A, and extends in the transverse direction of the machine, said sleeve thus being rotated by said pulley E.

Within the sleeve F is fitted a sliding spindle, G, one end of which is tapering or pointed for holding the cop, the main length of the spindle being squared. In the sleeve F are openings, in which are fitted rollers G', which are mounted on said sleeve and in contact with the angles or corners of the square portion of the spindle, whereby the spindle is adapted

to slide with ease within the sleeve and receive rotary motion from said sleeve. The standards F' F'' also provide bearings for a sliding rod or bar, H, which extends parallel with and above the spindle G, the opening in the standard F' being enlarged, so as to receive a block, J, and permit the same to play vertically or be raised and lowered slightly therein, said block having on its under side a recess, *a*, which is adapted to engage with the top of said standard F'.

Encircling the rod H is a spring, K, which bears at one end against the collar of the belt-shipper on said rod and at the other against standard F, whereby, when the block J is raised, the connected portion of the rod rising with it, the recess *a* is disengaged from the contiguous portion of the standard F', and the spring K forces the rod H forward, in the present case in the direction of the arrow, Fig. 1.

In order to raise the block J there is secured to the spindle G a nose or cam-shaped piece, L, which is so disposed that when said spindle is run back said piece, rotating with the spindle, strikes the projecting portion J' of the block, and its curved face rides on said portion and so raises the block, whereby the spring K is permitted to be operative, as above.

Connected with the rod H is a belt-shipper, M, which is adapted to engage with the belt or band D, the same being formed with a longitudinally-projecting arm, N, which is so disposed that when the rod H is moved, the shipper following the same, the arm N strikes a projection, P, formed on the pulley E, and thus the rotation of said pulley is stopped. The pulley E has a portion of its length or a connected part of reduced diameter, (shown in Figs. 1 and 3,) to which portion the belt or band D may be moved by the shipper M, whereby said belt or band becomes slack and inoperative, and the pulley is relieved of power.

Q represents the cop-shaping cup, into which the pointed end of the spindle G projects, said cup being pivoted to a plate, R, which is connected with a stationary shaft, S, which extends longitudinally and is mounted on the top of the frame A.

Extending parallel with the shaft S and mounted on the frame below said shaft is a rotary shaft, T, to which is clamped the finger U, by which the thread is guided in the operation of being formed into a cop. To said shaft T is fixed a lever, V, the lower end of which is pivotally attached to a pitman, V', which is connected with an eccentric strap, V'', which encircles an eccentric, W, keyed or otherwise secured to the driving-shaft B. The cup Q has a depending part, Q', below its axis, which is adapted to be engaged by a gravitating latch, Q'', which is also pivoted to the plate R, whereby the cup may be securely held in operative position. When the latch is raised, the cup is no longer held thereby, and so falls, as shown in Fig. 7. By raising the cup its part Q' presses down the nose of the latch until said nose is cleared, when the weighted end of the latch falls and causes the automatic engagement of the latch and cup. The plate R has at its back a horizontal lug, R', which is rotatably fitted on a vertical pin or stud, R'', rising from a collar, X, the latter being connected with the shaft S, and held in place by a screw or bolt, X', which is fitted to said collar and tightens against said shaft. It will be seen that the lug R' may be turned on the stud R'', so as to adjust the cup angularly with reference to the point of the spindle, and the collar X permits lateral adjustment of the cup on the shaft, as well as an angular adjustment in a plane at a right angle to the adjustment permitted by the stud R''. The shaft S is held in position in the frame A by means of a socket, Y, which receives the end of the shaft and the head of a bolt Z, which is fitted from within said socket and passes through the frame A, a nut, Z', being provided for holding said bolt and tightening it in position, a set-screw, Z'', also tightening against the end of the shaft for preventing displacement of the shaft, as most clearly shown in Fig. 2.

A' represents the spool, which is properly mounted, the same being shown dotted in Fig. 2, and A'' represents a coiled tension-spring, one end of which is connected with an arm, A''', and the other end carries a head or guide, b, which is in contact with the thread which leaves the spool and passes to the cop or spindle on which the same is formed. The arm A''' is provided at its lower end with a longitudinal slot, a³.

A'''' designates a vertical standard, which is secured to the frame of the machine and provided at its upper end with a vertical slot, a''''.

B'' designates a bolt, which passes through the slots a'''' a'''' when the lower end of arm A''' is arranged across the upper part of standard A'''''. By loosening said bolt and then slightly moving said arm as allowed by said slots the said spring may be adjusted vertically, horizontally, or both vertically and horizontally, as desired. By this provision the adjusted tension of the thread may be preserved, the head or guide yielding and conforming to the in-

equalities of the thread. Power is applied to the shaft B, whereby the pulley C and eccentric W are rotated. The belt or band D imparts rotary motion to the pulley E, and consequently to the spindle G. Vibrating motion is imparted from the said eccentric to lever V through the pitman V', whereby the finger U is operated, the thread or yarn being previously run from the spool A' under the head or guide b, then through the eye of the finger to the pointed end of the spindle G, with which it is connected. The normal position of parts is shown in Fig. 1, the belt or band D passing around the larger diameter of the pulley E, and the block J being interlocked with the standard F'', owing to its shoulder or recess a embracing the wall of said standard. As the thread or yarn winds on the spindle the cop is formed. As the cop increases in size it bears against the inner face of the cup Q, and owing to its conical form it is forced rearward or in the direction toward the rod H, thus moving the spindle in the same direction. When the cam L reaches the projecting part J' of the block J the cop is about finished. The cam then raises said block, whereby it is disengaged from the wall of the standard F'', with which it interlocked, (see Fig. 3,) and the spring K is operative, forcing the rod H in the direction toward the cup. This causes the shipper M, which moves with the rod, to shift the belt D to the smaller portion of the pulley E, thus slacking said belt and relieving the pulley of the power of the same. The projection P on the pulley now strikes the arm N of the shipper, whereby the pulley is immediately stopped and the spindle G ceases its rotation. The latch Q'' is raised, thus releasing the cup Q, whereby the latter drops, and owing to its channel or open part entirely clears itself of the cop. The thread or yarn is cut and the cop removed from the spindle, the latter then returning to its normal position by the action of a weight or bob, G'', depending from a cord, G''', which is passed around a pulley secured to the frame A and connected with the end of the spindle. The rod H is now forced back, for which purpose it is provided with a knob or handle, and the block J is again engaged with the standard F''. As the shipper moves with the rod it brings the belt on the larger diameter of the pulley E, thus tightening the same and causing rotation of the said pulley and the spindle. The cup is raised and secured to the latch Q'', and the thread or yarn again connected with the spindle, and so another cop begins to be formed, the subsequent operations being similar to those previously stated.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A pivoted cup having a longitudinal opening with a depending part, Q', in combination with a gravitating latch and supports

for said latch and said cup, substantially as and for the purpose set forth.

2. A cup-supporting plate, a vertical stud, a collar, a set-screw, and shaft, combined and operating as described, whereby the cup may be adjusted in the manner stated.

3. A cup-bearing shaft, the frame, a socket-piece, bolt, nut, and set-screw, combined and operating substantially as and for the purpose set forth.

4. A cop-holding spindle, in combination with a rod, a block thereon, a spring bearing against the rod, a bearing for the rod having an enlarged opening, and a lifting-cam on the

spindle, combined and operating substantially as and for the purpose set forth.

5. A cop-holding spindle, an encircling-pulley, a projection, P, on said pulley, and means for operating the pulley, in combination with a sliding rod, a shipper, and an arm on said shipper adapted to engage with said stop, substantially as and for the purpose set forth.

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WILLIAM S. GRUNDY.

Witnesses:

A. P. GRANT,

W. F. KIRCHER.