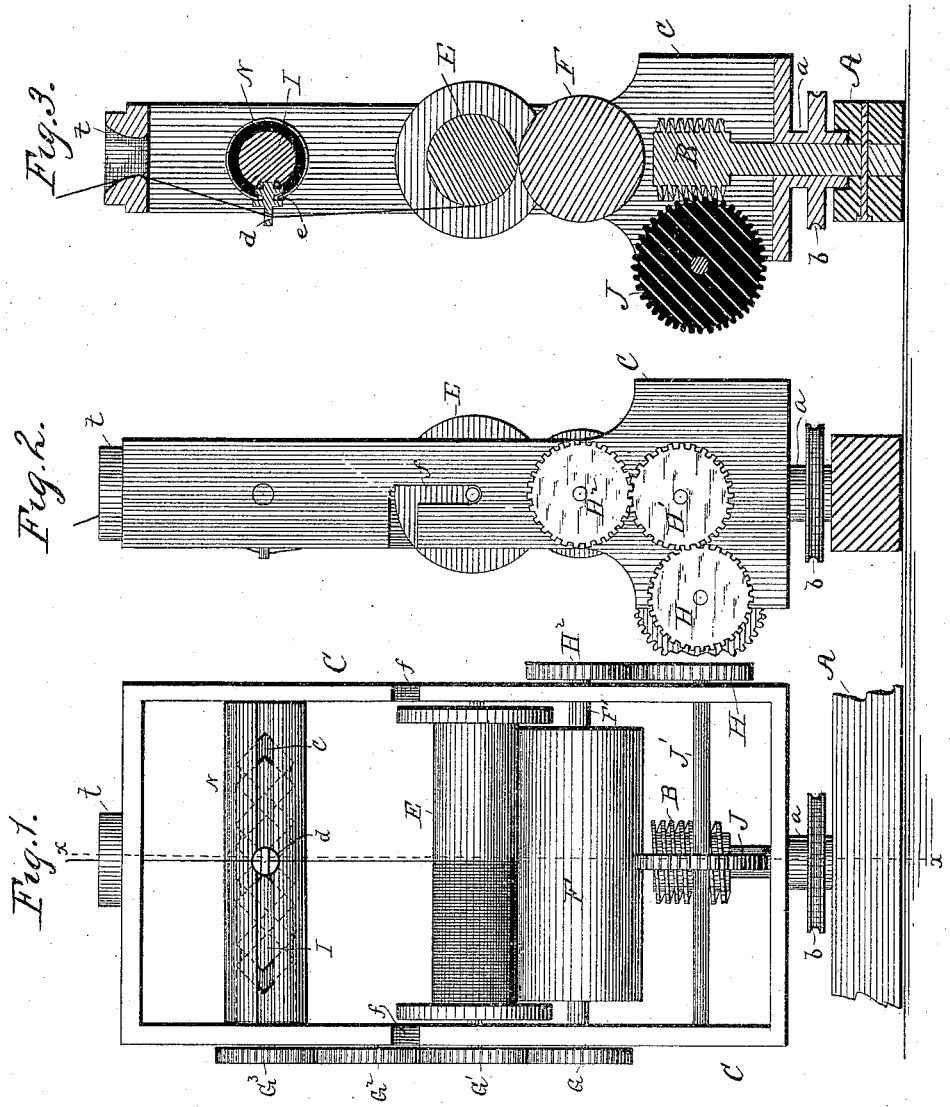
(No Model.)

O. HANNA & H. W. T. EARNSHAW.

MACHINE FOR SPINNING AND WINDING YARN, THREAD, &c.

No. 306,246. Patented Oct. 7, 1884.



WITNESSES:

N. B. Brown

Edw. W. Byrn

INVENTOR:

O. Hanna

H. W. T. Earnshaw

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

OSCAR HANNA AND HIRAM W. T. EARNSHAW, OF DOVER, KENTUCKY, ASSIGNORS OF THREE-FIFTHS TO JAMES EARNSHAW, OF SAME PLACE, AND JAMES W. WOMELDORFF AND CHARLES F. CORBEN, BOTH OF MIDDLEPORT, OHIO.

MACHINE FOR SPINNING AND WINDING YARN, THREAD, &c.

SPECIFICATION forming part of Letters Patent No. 306,246, dated October 7, 1884.

Application filed July 30, 1883. (No model.)

To all whom it may concern:

Be it known that we, OSCAR HANNA and HIRAM W. T. EARNSHAW, of Dover, in the county of Mason and State of Kentucky, have invented a new and useful Improvement in Machines for Spinning and Winding Yarn, Thread, &c.; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front elevation of that portion of a spinning and winding machine embodying our invention. Fig. 2 is a side elevation of the same. Fig. 3 is a vertical section through the line *x x* of Fig. 1.

Our invention consists of a machine that will draw, spin, wind, and twist wool, cotton, silk, flax, and all other fibrous materials, the said machine being particularly adapted to the spinning of roving as it comes from the condenser.

In the drawings, A represents a stationary rail, from which rises a stationary screw or worm, B. Below the thread of this screw, and about its shank, is swiveled an upright rectangular frame or head, C, which upon its under side has a rigidly-attached boss, *a*, resting in a recess of the rail, and provided with a pulley, *b*, whose periphery is grooved to receive a band, by which it and the upright frame or head C are rotated in a horizontal plane.

J is a toothed wheel fixed to a shaft, J′, journaled in the lower part of the upright frame, and which wheel meshes with the threads of the screw or worm B. Upon one side of the upright frame is a train of gear-wheels, H H′ H^2, which connect the shaft J′ with the shaft F′ of a drum, F, and upon the opposite side of the upright frame is a train of gear-wheels, G G′ G^2 G^3, which connect the shaft of the drum with the shaft I, having on its periphery a double or crossed spiral groove, *c*, in which travels the end of a reciprocating eye, *d*. Around the double or cross-grooved shaft is disposed a cylindrical casing, N, having upon one side a straight longitudinal slit, through which projects the reciprocating eye *d*, and the sides of which slit act as guides to cause the eye to move back and forth in the spiral crossed grooves in direction parallel to the axis of that shaft. The said eye is formed with a transverse groove, *e*, which engages the edges of the cylindrical casing M, and by which the eye is held in place and prevented from dropping out. In the sides of the upright frame, just above the drum F, are formed right-angular slots *f*, which have an outlet upon the edges of the frame, and in the vertical portions of these slots are received the journals of a spool, E, whose periphery between its end flanges rests upon the periphery of the drum, and is rotated by the latter by frictional contact therewith. In the upper end of the upright frame is formed a throat, *t*.

The operation of our invention is as follows: Horizontal rotation being imparted to the upright frame by means of the belt acting upon the pulley *b*, the roving passing through the throat *t* is spun or twisted. As the toothed wheel J moves around the screw or worm B a rotary motion is also imparted to the shaft J′, and through the gears H H′ H^2 to the drum F, and this, by rotating the spool E by frictional contact, winds up the spun thread upon the spool E. The roving, after having passed through the throat *t*, also passes through the vibrating eye *d*, and as this moves back and forth through rotation of shaft I, impelled by gear-wheels G G′ G^2 G^3, connecting said shaft with shaft F′ of drum F, the thread is thereby laid upon the spool. By changing the number of teeth in the gears H H′ H^2, for imparting greater or less speed to the drum, we may cause the spool to revolve faster or more slowly in relation to the horizontal rotation of the frame which gives the twist, and thus increase or diminish the draw.

Our device may be attached direct to the condenser-card, to the jack-frame, or to the twister-frame when used as a doubler and twister. When attached to the condenser-card, the rub-rolls of the card answer the same purpose that

the feed-rolls of the jack do; or, in other words, they answer as delivering-rolls. The draft of the thread is regulated by the thread being wound as much faster than it is delivered as is requisite to give the desired draw or fineness. The screw or worm need not necessarily be stationary, but may be arranged to turn in the same direction with the frame with a differential speed, or in the opposite direction, if desired.

Having thus described our invention, what we claim as new is—

The combination of the rail A, having screw or worm B, the upright frame swiveling thereabout and having pulley *b*, the gear-wheel J and shaft J′, the gears H H′ H², drum F, gears G G′ G² G³, the cross-grooved shaft I, with slitted casing N and eye *d*, and the throat *t*, substantially as shown and described.

OSCAR HANNA.
HIRAM W. T. EARNSHAW.

Witnesses:
JAMES EARNSHAW,
HIRAM MANNING.