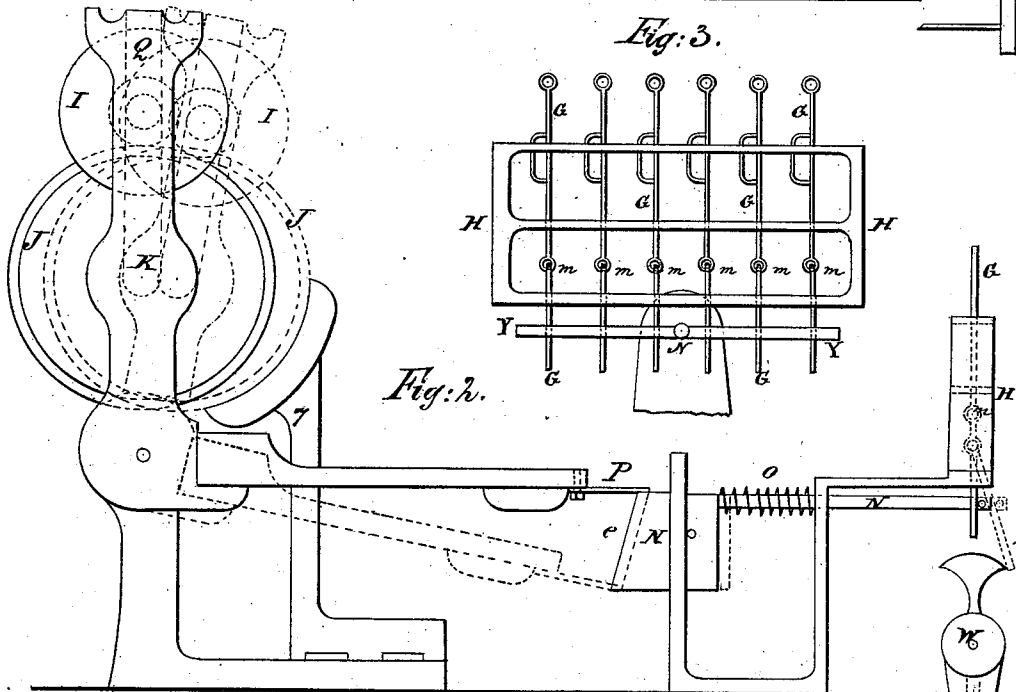
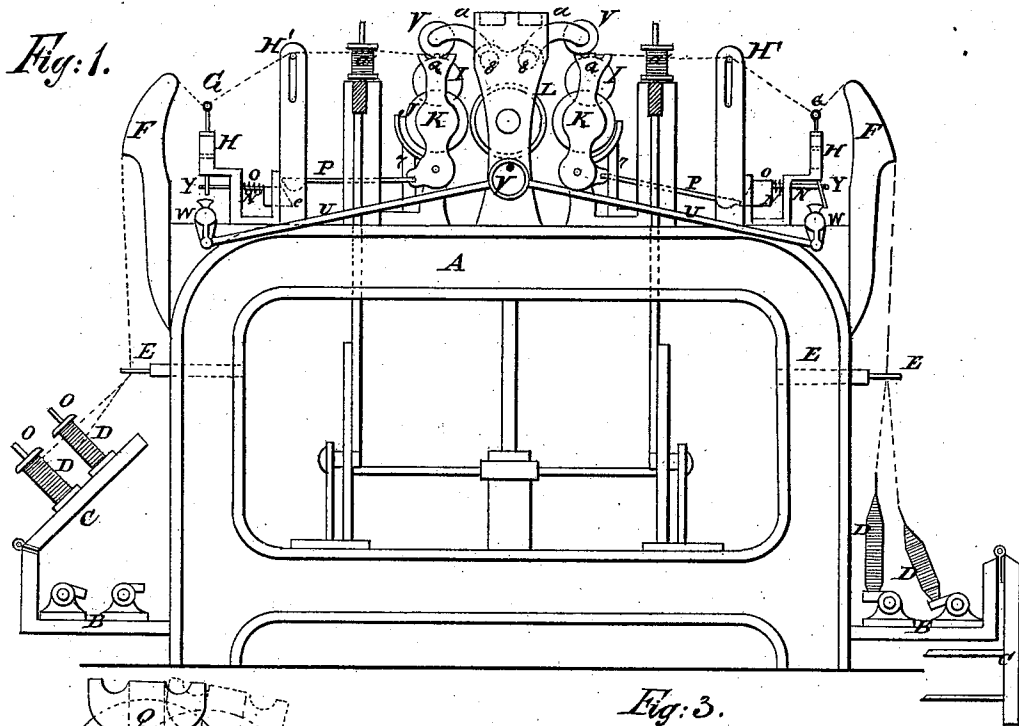


T. UNSWORTH.
 Doubling and Winding Machine.

No. 215,995.

Patented May 27, 1879.



WITNESSES:
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UNITED STATES PATENT OFFICE.

THOMAS UNSWORTH, OF MANCHESTER, ENGLAND.

IMPROVEMENT IN DOUBLING AND WINDING MACHINES.

Specification forming part of Letters Patent No. **215,995**, dated May 27, 1879; application filed September 10, 1878; patented in England, April 13, 1874, and June 28, 1875.

To all whom it may concern:

Be it known that I, THOMAS UNSWORTH, of Manchester, England, have invented a new and useful Improvement in Doubling and Winding Machines and in Stop-Motions therefor; and I 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 an end view of my machine, the left-hand side showing the machinery in proper operative position, with the yarn unbroken and the machine properly winding. The right-hand side of the machine shows the yarn broken, and that side consequently stopped; Fig. 2, a larger side view of the stopping-motion, the full lines showing the position of the lever and slide-bar while winding, and the dotted lines showing the position when the thread or yarn is broken. Fig. 3 is a front view of the drop-wires and their longitudinal rod, together with the frame for carrying the same.

On the 13th day of April, 1874, I took out Letters Patent for improvements in stop-motion winding doubling-frames in England, numbered 1,268; likewise on the 28th day of June, 1875, and numbered 2,341, of the same title, but containing additional improvements. This present (United States) patent includes portions of the mechanism shown and described in both said English patents.

In the accompanying drawings, A A is the frame; B B, the stand-boards for carrying cops or bobbins; C, a board, hinged on the board B, specially for carrying bobbins, O O being spindles for the latter. D D are bobbins and cops. E is a friction-eye used when heavy tension is required, but not with soft yarn. F is the breast drag-board; G, the drop-rods, (see Figs. 2 and 3,) which are jointed at *m*; H, the bracket for carrying the same; I, the taking-up bobbin; J, a friction-roller, driving the taking-up bobbin by the friction on the yarn as taken up, which tends to more firmly lay such yarn on the bobbin; K, a double-sided L-shaped or right-angular lever. N is a stop-bar, arranged to slide in an extension of bracket H. It is beveled on its inner end or face, *e*, which supports the free end of the horizontal arm P of lever K. *o* is

a spiral spring which encircles the shank of the slide-rod, and keeps the latter to its place in the bracket while not acted on.

When the slide-bar N recedes, as hereinafter described, the free end of lever-arm P, being no longer supported, falls, which allows the lever K to tilt on its pivot, thus bringing the upper end, Q, forward, together with its bobbin I and friction-roller J, so that the latter is brought immediately into the circular receptacle of stop-bracket 7, which immediately stops its motion, and also that of the bobbin I, driven by it. V is a presser-bowl, running freely in arms *a*, fulcrumed on rods 8. Said bowl is thrown back out of the way when the bobbins require changing or in any way altering. This presser-bowl may be made heavy or light, according to the required hardness of the wound bobbin and the strain the yarn will take. *a' a'* are guide-bowls, round which I pass my yarn to prevent slack ends in winding. L is the main friction-drum, which runs the length of the machine, driving a set of bobbin-driving drums, J, on each side. V is an eccentric, which works rods U, giving motion to circularly-reciprocating shaft W, which works freely under drop-rods G while the threads are whole; but when a thread breaks a rod, G, drops, its hinged lower end coming in contact with reciprocating shaft W, which, being behind the longitudinal rod Y, that passes through and is secured to the end of slide stop-bar N, draws said bar N forward, pulls it (N) from under the arm P of the L-shaped lever K, so that the latter drops down, as shown by dotted lines in Fig. 2, and in full lines on right-hand side of Fig. 1.

Having described my invention in detail, and the use of each part, I will now describe its action and effect. I take as many ends of yarn from bobbins or cops as desired, pass them through the friction-eye E, over the breast drag-board F, through the eyelets of the drop-rods G, thence over the bearer-rod H', round guide-bowl *a'*, onto bobbin I. This bobbin is driven by friction-roller J, thus winding the yarn on the body of such bobbin, and having the double effect of driving and pressing evenly and closely the yarn so wound. The presser-bowl V on top has a similar effect of pressing evenly and hard the wound bob-

bin I. The friction-roller J is driven by the main friction-drum L, being kept up to it by the horizontal position maintained by the end P of the L-shaped lever K, as shown in left-hand side of Fig. 1.

When an end breaks of any number of yarns that are being wound, doubled or single, the drop-rod G, connected therewith, falls, being liberated by the breakage of such thread. As shown in right-hand side of machine, in Fig. 1, and also in Fig. 2, the oscillating shaft W draws the bar N forward by striking such rod G against the longitudinal rod Y, and the beveled end *e*, slipping from under arm P, brings forward the driven roller J till it drops into the circular flange of stop-bracket 7, the contact with which instantly stops it and the bobbin I, resting on and driven by said roll J. For heavy winding I substitute gearing for driving-power.

Having described my invention, and the way it is worked, I claim as new—

1. The combination of right-angular lever K, provided with the friction-roller J, and carrying the bobbin I, with the friction driving shaft or drum L, the stop-bracket 7, and a device which holds said lever vertical when the threads or yarns are whole, and allows said lever to tilt when a thread or yarn breaks, substantially as specified.

2. The combination of the slide-bar N and its spring with the oscillating shaft W, the drop-rods G, lever K P, and friction-roller J, carried thereby, and driving-shaft L, substantially as specified.

3. The combination of guide-bowl *a'*, presser-bowl V, friction-roller J, drag-board F, and stand-board B C, having spindles O, as shown and described.

THOMAS UNSWORTH.

Witnesses:

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