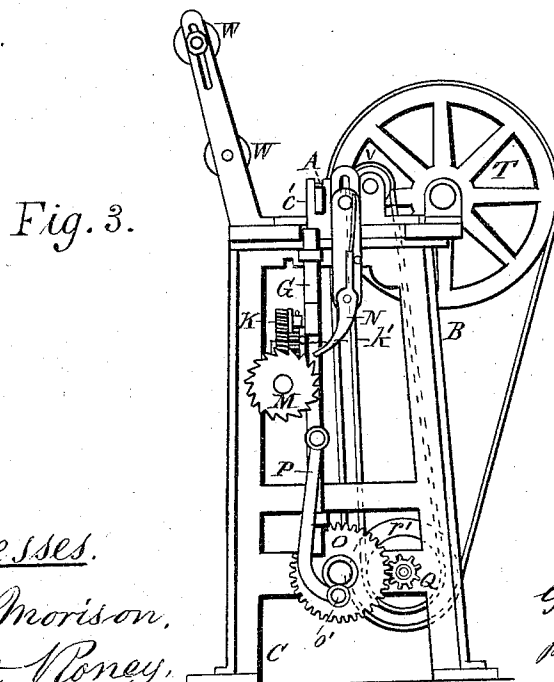
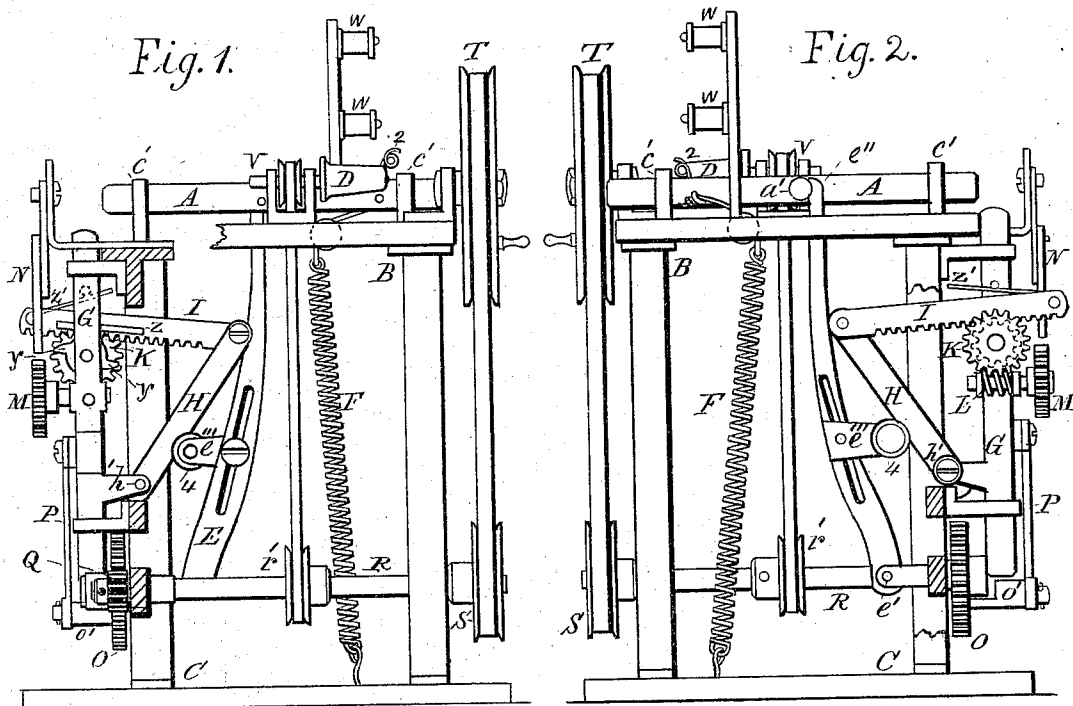


Machines for Winding Silk Floss.

No. 150,581.



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IMPROVEMENT IN MACHINES FOR WINDING SILK FLOSS.

Specification forming part of Letters Patent No. **150,581**, dated May 5, 1874; application filed April 1, 1874.

To all whom it may concern:

Be it known that I, GEORGE E. JENKINS, of the city of Philadelphia, in the State of Pennsylvania, have invented an Improved Machine for Winding Silk Floss, of which the following is a specification:

The object of my invention is to produce an automatically-winding machine that will wind the floss around the conical bobbin in regular and uniform spirals in short longitudinal sections, overlapping each other as they are formed around the bobbin from its head to its smaller end, and in a rapid manner; and this I accomplish by means of a longitudinally-reciprocating advancing carrier of the running floss operated by a combination of mechanical devices, which will hereinafter be described in full, clear, and exact terms with reference to the accompanying drawings, in which—

Figure 1 is a front elevation of my said improved machine; Fig. 2, an elevation of the rear side of the same; and Fig. 3 an elevation of one end of the same.

The reciprocating advancing carrier A of the floss (not shown) is supported upon the top of a frame, B C, so as to slide longitudinally backward and forward in stationary guide-bearings *c' c'*, an eye, 2, for the running floss being fixed to the upper edge of the sliding carrier A at a point, which, during the full extent of the reciprocating motions of the said carrier, will cause it to be carried from opposite the head of the conical bobbin D to a point opposite, or nearly opposite, to its smaller end. Motion is given to the carrier A directly by an upright lever, E, which bears against it in one direction, and a spiral spring, F, which draws it back in an opposite direction. The lever E is of the third order, has its fulcrum-pin *e'* fixed near the bottom of the frame B C, with its upper or weight end *e''* bearing against a knob, *a'*, fixed in the rear side of the sliding carrier A. (See Fig. 2.) The power point of said lever E consists of a grooved pulley, 4, which is attached to an adjustable arm, *e'''*. Motion is given to lever E, and consequently to the sliding carrier A, by the vertically-sliding motions of an upright bar, G, that carries an inclined bar, H, which has its lower end pivoted to bar G, and its upper end pivoted to one end of a rack,

I, the teeth of which gear with the teeth of a pinion, K', which is rigidly fixed concentrically to the side of an obliquely-toothed wheel, K, that is driven by a worm-wheel, L, beneath, the shaft of which has a ratchet-toothed wheel, M, fixed thereon, which teeth come in contact with a spring-pawl, N, as the vertically-sliding bar G rises, and thus rotates the worm-wheel L, and consequently the wheel K and pinion K', and these move the rack I inward and increase the inclination of the bar H, which bears in the groove of the pulley 4. The required vertical motions of the sliding bar G, with its said appendages H I K K' L M, are given by a spur-wheel, O, which has a wrist-pin, *o'*, that is connected to the said bar by a coupling-rod, P, the rotary motions of the wheel O being by a pinion, Q, on the shaft R, which has a grooved pulley, S, on its opposite end, driven by a cord that connects it with the main driving-wheel T of the machine. Near the midlength of the shaft R a grooved pulley, *r'*, is fixed, which, by a cord, or band gives rapid rotary motion to a small shaft and pulley, V, which carries the removable or changeable bobbins, upon which the floss is to be successively wound. The skein or hank from which the floss is wound runs around two adjustable bobbins, W W, which are supported upon the top of the frame B C and directly opposite to the bobbin D. For the purpose of limiting the inward movement of the sliding carrier A, so as to prevent the eye or loop 2 thereof from carrying the running floss beyond the outer end of the bobbin D, a flat plate, Z, (see Fig. 1,) is fixed to project from one side of the rack I, and a cam having two opposite projections, Y Y, fixed to the pinion K', so that when the said pinion has carried the rack I far enough inward, one of the cam-projections having come into contact with the under side of the plate Z, and raised the rack out of connection with the pinion K', the spiral spring F immediately pulls the sliding carrier back to its first position, and frees the rack I from the cam-projection, and it consequently drops into gear with the pinion K'. A slender wire spring, *z'*, keeps the rack from slipping out of contact with the teeth of the pinion K' when the cam-projection is not in contact with the said rack, as just described.

The operation of this machine is as follows: The sliding carrier A being drawn outward by the spiral spring F, and the rack I being also in its extreme outward position and in gear with the pinion *k'*, and just freed from contact with one of the projections of the cam, the eye 2 of the carrier A will be directly opposite to the longer end of the bobbin D, upon which the floss, supposed to be on the running bobbins W W, is to be wound. The end of the running floss is then attached to the larger end of bobbin D, and rotary motion given to the driving-wheel T, and consequently a rapid rotary motion will be given to the bobbin D, and at the same time vertically-sliding motions will be given to the bar G, which carries with it the parts H I K *k'* L M and the cams Y Y. The inclined bar H, in consequence of the up-and-down motions of the bar G, runs in the groove of pulley 4, and during the downward motions of bar G forces the lever E before it, and thus moves the sliding carrier A, so as to cause its eye or loop 2 to pass from the head of spool D toward the smaller end of the latter and carry the running floss with it, so that it will be wound spirally around the bobbin D; and during the upward motions of bar G the spiral spring will draw the sliding carrier A back to its original position, and at the same time cause the running floss to be wound around in opposite spirals upon the bobbin D. Thus, about one-third of the length of bobbin D will be covered by two layers of the floss; but as the wheel M, and consequently the rack I and the inclined bar H, are moved forward or inward by the pawl N a short distance every time the bar G rises, the inclination of the bar H will be slightly

increased, and, therefore, the extent of motion in the lever E will be increased proportionately, and the eye or loop 2 will carry the running floss proportionately farther along toward the smaller end of bobbin D, and so on until the crossing spirals reach from head to tail of bobbin D, at which time one of the cams Y will release the rack from the teeth of wheel K, and allow said rack to be pushed outward to its original position by the lever E acted upon by the spring F through the sliding carrier A. The cop of floss being now finished the machine may be stopped, the bobbin D drawn off by hand, with the floss accurately wound in uniformly regular crossing spirals, without any risk of deranging the coils or breaking the cop, leaving the machine ready for a repetition of the same operation on another bobbin.

It will be understood without any further explanation, that this machine will automatically wind the floss upon the bobbin D in a regular and perfect manner, and with great rapidity.

I claim as my invention—

The combination, with the vertically-sliding bar G, operated as described, of the inclined bar H, rack I, pinion *k'*, cams Y Y, wheel K, worm-wheel L, ratchet-wheel M, and pawl N, operating as described, for the purpose of actuating the vibratory lever E and sliding carrier A, in laying the running floss on the bobbin D in successive crossing spirals gradually extended from the head to the tail of said bobbin, as set forth.

Witnesses: GEORGE E. JENKINS.

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