

F. Cheney Winding Silk.

No 3,328.

Patented Oct. 9. 1847.

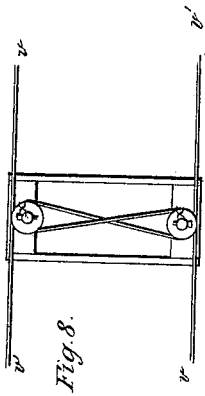


Fig. 8.

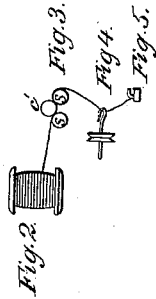


Fig. 1.

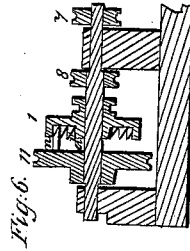
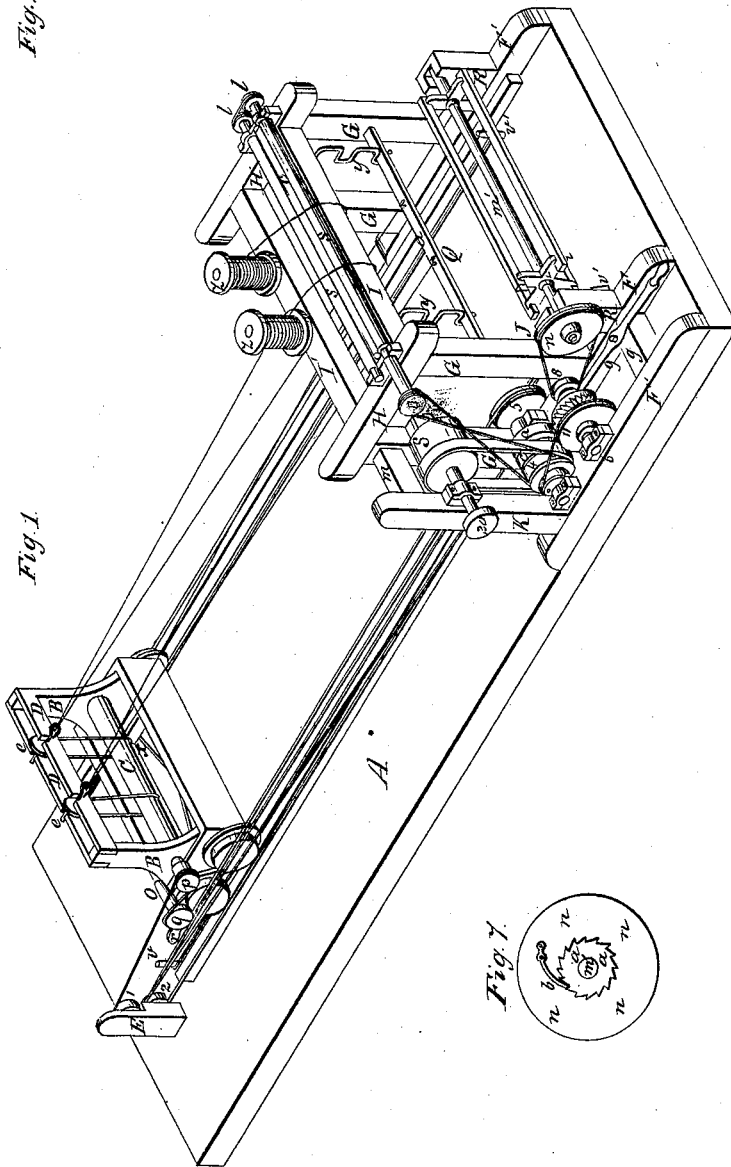


Fig. 6.

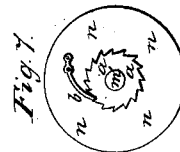


Fig. 7.

UNITED STATES PATENT OFFICE.

FRANK CHENEY, OF MANCHESTER, CONNECTICUT.

MACHINERY FOR DOUBLING, TWISTING, AND REELING THREAD.

Specification forming part of Letters Patent No. 5,328, dated October 9, 1847; Reissued April 29, 1851, No. 197.

To all whom it may concern:

Be it known that I, FRANK CHENEY, of Manchester, in the county of Hartford and State of Connecticut, have invented a new and useful Machine for Doubling, Twisting, and Reeling Silk or Threads of other Materials; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a perspective view of the machinery and car after the latter has been driven out and the twisting is about to commence. Fig. 2 is a lateral or side view of one of the bobbins. Fig. 3 is a sectional view of the drawing rollers (S S Fig. 1) and a loose roller C' Fig. 3 laying on top of the silk and rollers S S. Fig. 4 is a side view of one of the spindles *e* Fig. 1 which are in the upper part of the car frame. Fig. 5 is a view of the catch on the rod, *a* Fig. 1, for fastening one end of the thread. Fig. 6 is a sectional view of the clutch shaft and its appendages. Fig. 7 is a view of the inner face of the wheel *n* on the end of the shaft of the reel, showing the catch on its face and also the catch wheel which is fast to the shaft of the reel. Fig. 8 is a bottom view of the horizontal wheels under the car, of Fig. 1, and shows the arrangement of the cords for steadying the car.

Figs. 6, 7 and 8 are represented on a larger scale than the other figures, and Figs. 2, 3, 4 and 5, in combination, show the manner in which the thread passes from the bobbins through the drawing rollers thence through the hook on the end of the spindle, attached to the car, thence back to a catch hook on the bar, *a* Fig. 1, in the *y y* under the drawing rollers.

To enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation.

First lay an ordinary platform, A Fig. 1, with a rail-way similar to those now in use for cotton mules. Construct a car with two wheels for each rail and the car having two uprights B Fig. 1, one near each set of wheels; between these uprights and supported by them is a drum C Fig. 1, one end of which projects beyond the upright and has a band wheel *p* Fig. 1 upon this extremity outside the upright. From the

top of the car box projects horizontally an arm parallel to the drum C Fig. 1 with a band wheel *q* Fig. 1 upon its extremity and which revolves around on this arm.

Under the car at each end is a horizontal wheel, *x*, Fig. 8, with a double groove. From the front of the car projects an arm having an elbow and projecting beyond the car wheels as seen at *r* Fig. 1. The uprights B spring from each end of the car and are connected at top by two cross pieces D Fig. 1. These cross pieces D have an interval between them and support two spindles *e e* Fig. 1 with hooks projecting from them toward the frame to hook on to the silk to be twisted. Around each of these spindles *e e* and the drum C Fig. 1 is an endless cord. At each end of the rail way and on the inside of it is a permanent stake driven as *v v'* Fig. 1 to which the cords, seen in Fig. 8, which pass around the horizontal wheels under the car are fastened, each cord crossing diagonally from opposite sides from front to rear of the opposite wheels, as from *v* Fig. 8 passing along the rail to the rear of the wheel *x* Fig. 8, then diagonally across and around the front of the opposite wheel thence to the rear of the track at *v'*, so with both cords. The ends of the same cord thus pass to points *v v'* diagonally opposite at the ends of the road. At the outer end of the rail road or extremity of the track, and on the same side as that from which the band wheel *p* of the car projects, is a vertical stationary post E Fig. 1 supporting two band wheels 1 and 2 Fig. 1 the one above the other, but the upper one, 1 Fig. 1, being outside of the other, 2, Fig. 1.

We will now describe the stationary frame work and machinery and then the operation of the whole. At one end of the rail track, parallel to it and just outside the rails, we lay two sleepers Fig. 1 F F'; from each of these and opposite each other spring two uprights G G, G G. The two uprights on the one side are connected by a cross piece H fastened over the top of them; and so with those on the opposite side by another cross piece H similar and fastened in the same way. Two beams I', I, at convenient distances apart, and parallel, are fastened to the cross pieces H, and are at right angles to the direction of the rail road. Upon the cross piece I' nearest the car are spindles

upon which spools are placed and around which they revolve. Above and parallel to the other cross piece I Fig. 1, are placed two rollers S S Fig. 1 in the same horizontal plane supported on seats, with semicircular grooves cut in them to receive the rollers, and these seats rest upon and are firmly fastened to the top of the frame work and near the extremities of the rollers: these rollers (*s s* Figs. 1 and 3) are each terminated at the same end by a band wheel (Z Z Fig. 1) around both of which an endless coupling cord passes, but the end of one of these rollers is also terminated at the opposite end by a band wheel (Fig. 1). At a convenient distance from the piece (F Fig. 1) which forms a part of the bed of the frame work (sill piece) is placed parallel to it another sill piece (F'' Fig. 1) of the same length and the two connected at each end by cross pieces (one of which is seen at *g* Fig. 1) also resting upon the common platform. From the car end of this smaller platform (F F'' *g* Fig. 1) springs an upright (K Fig. 1) which is connected at the top with the main frame by a horizontal cross piece (*m* Fig. 1) and which is parallel to the cross pieces (one of which is seen at *g* Fig. 1) at the bottom of the frame just described.

The uprights G and K Fig. 1 support, by caps or otherwise near their upper end, a horizontal shaft on which is fastened a large drum (3 Fig. 1) and on the outer end of the shaft projecting beyond the frame is a driving drum (20 Fig. 1). Under the above shaft is another shaft resting in caps and on the sill pieces F F'' Fig. 1, of the frame. This lower shaft has on its inside end (and which end projects beyond the sill pieces F'' F Fig. 1 and between F and F' Fig. 1) a groove wheel (5 Fig. 1) which is fast to the shaft; next to this wheel and between the sill pieces F F'' is a drum *a'* Fig. 1 fixed and fastened to the shaft; adjoining this drum and at the middle of the shaft is a drum *c'* Fig. 1 which revolves freely around the shaft; and outside of this drum *c'* Fig. 1 and between the sill pieces F'' F is another drum, 4 Fig. 1, with a groove wheel A Fig. 1 on its outer end. This drum and wheel revolve freely around the shaft which supports them. Immediately in rear of the shaft just described and supported by the same sill pieces, F'' F Fig. 1, is another shaft having on its inner end, between F and F' Fig. 1, a band or groove wheel (7 Fig. 6) and which is fastened to it; inside of this band wheel and between F F'' Fig. 1 the short sill pieces, is another groove or band wheel (8 Fig. 1 and Fig. 6,) also fastened to the shaft, next to this band wheel and in the middle of the same shaft is a wheel having cogs on its outer side (as 1 Fig. 6) and which cog

wheel revolves with the shaft by counter sinking a key, lengthwise with the shaft (*d'* Fig. 6), and having one edge of it to project above the shaft and a groove or mortise in the hub of the cog wheel (1 Fig. 6) to fit it; then outside of this wheel (1 Fig. 6) and toward the sill piece, F'' Fig. 1, is a groove or band wheel (11 Figs. 1 and 6) which revolves freely around the shaft; this groove wheel has a pin projecting horizontally (as *n'* Fig. 1) from its inner surface toward the cog surface of the wheel 1 Fig. 6. By means of a lever 9 Fig. 1 fixed in rear of this cog wheel 1 Fig. 6, the cog wheel is moved toward the band wheel, 11 Fig. 6, so that the pin *n'* Fig. 6, comes in contact with and clamps the band wheel 11 and makes the wheel 11 Figs. 6 and 1 revolve with the shaft, or the wheel 1 Fig. 6 may be forced inward and free from contact with wheel 11 and so that wheel 11 will revolve freely around the shaft.

In rear of the main frame on a line with the cross piece *g* Fig. 1 and springing from the sill pieces F F' are two short uprights R the upper ends of which have mortises in them, and these uprights support the shaft *m'* of a reel which is between them and which reel is immediately in rear of the car. That end of the shaft *m'* Fig. 1 of the reel which is toward the drums and wheels just described projects beyond its support and has a catch wheel (as seen at *a a* Fig. 7) fixed to it near its end. Upon the end of the shaft *m'* of the reel and outside of this catch wheel *a a* Fig. 7 is a band wheel *n* Figs. 1 and 7 which revolves freely around the shaft, on the inner surface of this band wheel *n* Fig. 7 is a catch (*b* Fig. 7) which is so placed (pointing to the rear) that the wheel *n* revolves freely around the shaft *m'* toward the other end of the track (in a forward direction of the car) but in a reverse motion the catch *b* comes in contact with the catch wheel *a* Fig. 7, on the shaft of the reel and thus forces the reel to revolve with it.

Supported by the main frame and projecting downward from it directly under the rollers *s s* Fig. 1 are two wires *y y* Fig. 1 so bent as to form elbows at different distances, between two of which opposite elbows is placed a small bar, *a* Fig. 1 to which the end of the article to be twisted is tied or caught as Fig. 5. These wires *y y* Fig. 1 are called guides and the bar *a* is placed in the lower elbows when the car is to be run out and in the upper elbows and close to the rollers *s s* Fig. 1 when the twisting is about to be commenced.

To put the whole in operation power is applied to the driving drum 20 Fig. 1. This gives motion to the drum 3 Fig. 1 which is coupled by a band with the drum 4 Fig. 1. The drum 4 Fig. 1 is coupled with the

groove wheel 11 Fig. 1 by a cord, endless, around the groove 4, and the groove of the wheel 11 Fig. 1. Motion is given to the shaft of the wheel 11 by clamping the wheels 1 and 11 (Fig. 6) and the wheel 7, Fig. 6, (being fast to the shaft) gives motion to the car and drives it out by means of the cord which passes around it and the wheel 2 Fig. 1 at the other end of the track, both ends of which cord are fastened to an arm *r* Fig. 1 projecting from the front of the car. The groove wheel 8 Figs. 6 and 1 is coupled with the groove wheel *n* Fig. 1 of the reel by an endless cord and as the catch, on the wheel *n*, is toward the rear the wheel *n* revolves freely with the forward motion of the wheel 8 without catching and consequently without moving the reel. There is an endless cord which connects the drum 4, passing around a groove in its outer end, with the rollers *s s*, by giving a half twist to said cord and passing it around the groove wheel on the end of one of the rollers. These rollers are coupled at their other ends by a cord endless passing around the groove wheels at those ends. A small loose roller *c'* Fig. 3 is laid on top of the rollers *s s*, Figs. 1 and 3, keep the silk from paying out too fast from the bobbins.

The car having been run out the twisting commences. This is done by shifting the band which is on the drum 3 Fig. 1 until it shall connect the drums 3 and *a'* Fig. 1. The bar *a*, Fig. 1 is now put into the upper elbow of the *y y* wire. The drum, *a'*, being fastened to the shaft gives a motion to the groove wheel 5 Fig. 1 of that shaft and an endless cord is now passed around this wheel, 5, and thence under and around the wheel *q* on the arm of the car and under and over the wheel *p* Fig. 1 on the shaft (*c*) of the car thence forward to wheel 1 of post E and thence back to 5. Motion is imparted to this shaft (*c*) and the endless cords passing around this shaft *c*, and the wheels *e e* of the spindles, in the upper frame of the car, a motion is thus given to the spindles and the material twisted. One thread is now cut from above the bar *a* Fig. 1 and is tied or caught to the movable bar *a* Fig. 1, which bar, *a*, is then put into the reel. The band or cord which passes around the rollers *q p* of the car is now taken off and the car is run back by hand. The band around the drum 3

is removed from the drum *a'* into that of *c'* which has a free motion around the shaft and is unconnected with any thing, and this removal must take place before the car is run back by hand. This being effected you then run the car back and the cord from the car and passing around the wheel 7 Fig. 6 gives motion to this wheel, the wheels 1 and 11 being first uncoupled. The wheel 7 gives motion to the wheel 8 and it, by means of the coupling band, to the wheel, *n*, on the shaft of the reel. The motion of the wheel *n* being toward the rear the catch on the surface of the wheel fastens into the fixed catch wheel *a* Fig. 7 on the shaft of the reel and the reel is thus made to revolve.

The car is kept steady in running out and returning by means of the arrangement of cords underneath it as seen in Fig. 8 which has been already described.

The endless cord which is used for the twisting operation is around the wheel 5 Fig. 1, the stationary wheel 1 of the post E Fig. 1, over and under the wheel or drum *p* of the shaft *c* Fig. 1, thence over and under the wheel *q* on the arm of the car thence to the wheel 5 Fig. 1. The cord by which the car is run out passes from the car around the wheel 7 thence forward around the wheel 2 of the post E and thence to the car where it is fastened. In machines in general use the threads are doubled by one machine then removed to another and then twisted and the spindles run in and the reeling carried on. In the above described machine the material is doubled, then twisted and the spindles run in and the reeling effected while thus running in all by the same machine.

What I claim as my invention and desire to secure by Letters Patent is—

The combination of a reel, by means of a band wheel, with a catch on its inner surface, and a cog wheel on the shaft of the reel, connected by an endless band with a doubling and twisting machine for doubling and twisting threads of any kind, the whole is combined as to enable you to double and twist and reel threads by the same machine, which machine is combined and operates as is herein fully set forth.

FRANK CHENEY.

Witnesses:

CHARLES W. JOHNSON,
NATHAN P. JOHNSON.