



(No Model.)

2 Sheets—Sheet 2.

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MACHINE FOR TWISTING AND SPOOLING BARBED FENCE WIRE.

No. 259,917.

Patented June 20, 1882.

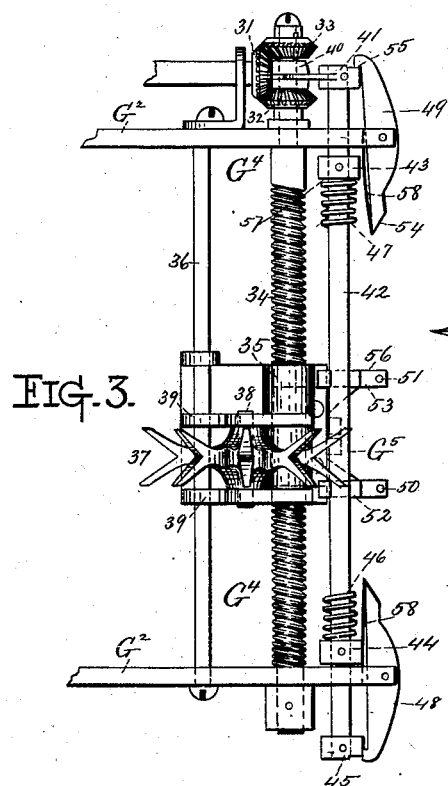


FIG 4

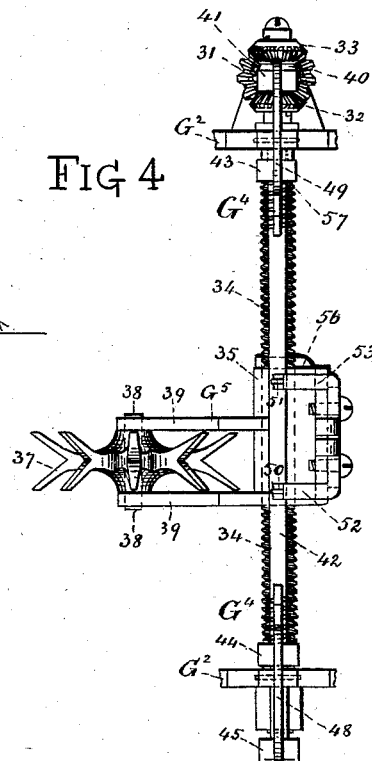
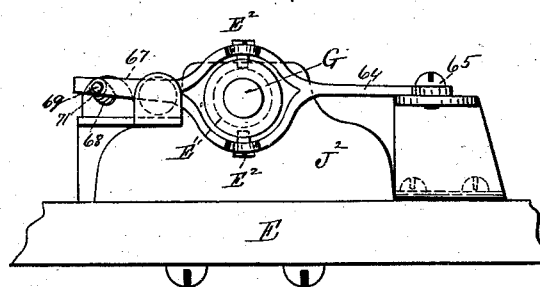


FIG. 5.



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# UNITED STATES PATENT OFFICE.

HENRY W. PUTNAM, LEVI BRADBURY, AND LEWIS WILLIAMS, OF BENNINGTON, VERMONT, ASSIGNORS, BY MESNE ASSIGNMENTS, TO WASHBURN & MOEN MANUFACTURING COMPANY, OF WORCESTER, MASSACHUSETTS, AND ISAAC L. ELLWOOD, OF DE KALB, ILLINOIS.

## MACHINE FOR TWISTING AND SPOOLING BARBED FENCE-WIRE.

SPECIFICATION forming part of Letters Patent No. 259,917, dated June 20, 1882.

Application filed September 30, 1881. (No model.)

*To all whom it may concern:*

Be it known that we, HENRY W. PUTNAM, LEVI BRADBURY, and LEWIS WILLIAMS, all of Bennington, in the county of Bennington and State of Vermont, have invented certain new and useful Improvements in Machines for Twisting and Spooling Barbed Fence-Wire; 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 a part of this specification, and in which—

Figure 1 represents a top or plan view of the twister and spooler machine, showing the barbed wire as it appears in the operation of being coiled thereon. Fig. 2 represents a vertical longitudinal section through the twister and spooler, taken on line CD, Fig. 1, looking in the direction indicated by arrow 2 of the same figure. Fig. 3 represents a top or plan view of the reciprocating wire-distributing device of the twister, which will be hereinafter more fully described. Fig. 4 represents a side view of the parts shown in Fig. 3, looking in the direction of arrow 4, same figure; and Fig. 5 represents an end view of a portion of the twister, looking in the direction of arrow 5, Figs. 1 and 2.

The object of our invention is mainly the production of a machine for twisting together wires upon one or more of which metallic barbs have been attached, and then spooling the completed barbed fence-wire.

The operative parts are arranged upon a bed-plate, E, resting upon supports F. The main driving-shaft G', to the forward end of which the reel or spool frame G<sup>2</sup> is secured, is arranged to turn in suitable bearings, J' J<sup>2</sup>, and to said shaft G' is secured a large driving wheel or pulley, H', by means of which the frame G<sup>2</sup> and parts attached thereto are rotated. The driving-shaft G' not only rotates the frame G<sup>2</sup>, as aforesaid, but at the same time turns the spool or reel G<sup>3</sup> at a different speed, and also gives to the carriage G<sup>5</sup> of the guiding device G<sup>4</sup>, which guides the barbed wire onto the

spool, a lateral reciprocating motion, thereby evenly distributing it upon said spool.

Upon a sleeve or short hollow shaft, H<sup>2</sup>, which turns upon shaft G' in bearing J', is secured a large friction wheel or pulley, H<sup>3</sup>, and a broad-face spur-gear, H<sup>4</sup>. Power is imparted from driving-shaft G' to operate spool G<sup>3</sup> and guiding device G<sup>4</sup> by spur-gears 21 21, being made to travel upon and rotate by spur-gear H<sup>4</sup>, when the frame G<sup>2</sup> is rotated, as said gear H<sup>4</sup> is held stationary, or nearly so, by the brake 60, and said gears 21 being arranged to turn upon suitable bearings secured upon said frame. Power is in turn imparted from gears 21 21 to the spool G<sup>3</sup> by means of spur-gears 22 22, spur-gears 23 23, shafts 24 25, small bevel-gears 26 26, and large bevel-gears 27 27, all of which are arranged to turn in suitable and convenient bearings secured to or formed in frame G<sup>2</sup>.

Upon the hubs 28 29 of bevel-gears 27 27 are formed or secured spool-holding arms 30 30, which grasp two arms of the spool, as represented in Fig. 1, thereby imparting the same rotary motion of said gears 27 and their hubs 28 29 to the spool, both ends of the spool being operated upon at the same time, thereby obviating all liability of the spool being twisted or broken, as in the case when the spool is driven from one end only.

The carriage G<sup>5</sup> of the guiding device G<sup>4</sup> is operated by a continuation of the same shaft, 25, which operates one side of the spool G<sup>3</sup> through bevel-gear 31, secured upon the end of said shaft, and bevel-gear 32 or 33, as the case may be, which are secured upon the end of a threaded shaft or screw, 34, the turning of said shaft 34 causing the carriage G<sup>5</sup> to travel back and forth, according to which way it is turned, by its passing through and working in a correspondingly-threaded hole or opening in the part 35 of said carriage, the latter being prevented from turning by a holding and guiding rod, 36, upon which it slides as it is propelled back and forth by its screw 34. The barbed wire, as it is drawn forward and coiled

upon the spool, passes over and is guided by a sprocket-wheel, 37, which turns upon journals 38 38 in the upper ends of side supports or standards, 39 39, forming a part of carriage G<sup>5</sup>. This carriage G<sup>5</sup> is reversed at the end of each lateral movement back and forth by reversing the turning of its operating-screw 34, which is performed in the following manner: A clutch, 40, is arranged between bevel-gears 32 33, by the operation of which the action of bevel-gear 31 may be imparted to either gear 32 or 33 to turn screw 34. Thus, if the clutch is drawn toward gear 32, as shown in the drawings, action is imparted from that gear to screw 34 by gear 31, while the other gear turns loosely upon said screw-shaft, a spline being formed upon said shaft to allow of such shipping and unshipping operation. The clutch 40 is connected with a collar, 41, which is secured upon the end of a rod or shaft, 42, upon which are also secured collars 43, 44, and 45. Said shaft 42 has sufficient lateral motion to operate clutch 40, as before explained, being so operated by means of spiral springs 46 47 upon shaft 42, dogs 48 49, and pins 50 51, secured in angular pieces 52 53, which form part of carriage G<sup>5</sup>. Said angular pieces may be provided with slots, so that they can be adjusted nearer to or farther from each other. Supposing clutch 40 to be in the position before stated and carriage G<sup>5</sup> in the position represented in Fig. 1, the operation of unclutching the action of gear 31 from gear 32 to gear 33, so as to turn screw-shaft 34 in the opposite direction, and thus reverse the motion of said carriage, is as follows: As carriage G<sup>5</sup> travels still farther forward toward dog 49, pin 51 strikes the beveled side 54 of said dog, which forces that end of the dog in toward shaft 42, and the outer end (which is provided with a shoulder or notch, 55, which catches over the edge of collar 41) out, thereby releasing its hold upon collar 41, when spring 47 then quickly forces forward shaft 42 by its being compressed between the side 56 of the angular piece 53 and the side 57 of collar 43, which operation forces forward clutch 40, so as to bring gears 31 and 33 in action with screw-shaft 34 to turn the latter in the opposite direction, when carriage G<sup>5</sup> is then propelled toward dog 48 and the above-described operation repeated, said dog 48 being formed and operated in the same manner as dog 49.

Each dog 48 and 49 is provided with a spring, 58, which forces the outer end or head of one dog down, so as to catch over its respective collar 41 or 45 when the other is forced out, as before described, by pin 50 or 51.

In order that the barbed wire 59 may be properly wound or coiled upon spool G<sup>3</sup> with a regular and uniform tension, an automatic friction and spring device is combined with the driving-shaft G' and friction-wheel H<sup>3</sup>, said device producing the greatest friction upon wheel H<sup>3</sup> when it is desired to turn spool G<sup>3</sup> at its greatest speed, (which is the case when the barbed wire first commences to be wound

upon it,) and with a decreasing speed as the spool is filled, and by which operation all undue tension on the barbed wire is prevented, as will now be explained.

A friction-brake, 60, is attached to a lever, 61, pivoted to a proper standard at 62. Its outer end, 72, is connected to the end 66 of the bell-crank lever 64 by means of a spiral or other spring, 63. The bell-crank lever 64 turns upon a pivot, 65, in a proper standard secured to frame E, and the long arm of said lever 64 is made to straddle a circular hub-piece, E', secured to the end of shaft G', and which hub-piece is provided with a groove in the center of its periphery for the reception of the screws E<sup>2</sup>, which pass through the split sides of lever 64, as fully indicated in Figs. 1 and 5 of the drawings, and by which connection shaft G' is free to turn, while at the same time any movement thereof longitudinally will be imparted to the long arm 67 of lever 64, which is arranged between rubber bumpers 73 and 74.

The end 67 of lever 64 is provided with a hole, 71, through which a curved pin, 69, passes, said pin being secured at 70 to a proper stand supported from frame E, and a spiral spring, 68, is arranged upon curved pin 69 between the end of lever 64 and the stand to which pin 69 is secured.

It will be seen from the foregoing description that when the tension of the wire is such as to draw the frame G<sup>2</sup> and its shaft G' forward, the long arm 67 of lever 64 will be drawn forward and the short arm 66 of said lever thrown out, thus releasing in a measure the friction of brake 60 upon friction-wheel H<sup>3</sup>, thereby allowing the barbed wire to be wound upon its spool with about the same tension from the time it commences to be wound thereon until the spool is filled.

The bumpers 73 and 74 serve the purpose of checking any too sudden extreme movement of lever 64, and also rendering the action of said lever comparatively noiseless.

Having now fully described our invention, what we claim, and desire to secure by Letters Patent, is—

1. The combination, with a twisting-frame, of a reel having gears upon both ends of its shaft and means for rotating the said gears, a feeding mechanism, and automatically-adjusting tension mechanism, substantially as shown and for the purposes set forth.

2. The combination, with reel-frame G<sup>2</sup> and means for rotating the same, of sliding shaft G' and frictional mechanism, substantially as and for the purposes set forth.

3. The combination, with sliding shaft G' and friction-wheel H<sup>3</sup>, of brake 60, levers 61 64, spring 63, and means for connecting lever 64 to shaft G', substantially as and for the purposes set forth.

4. The combination, with sliding shaft G', lever 64, spring 63, and lever 61, of bumpers 73 and 74, spring 68, and pin 69, substantially as and for the purposes set forth.

5. The combination, with frame G<sup>2</sup> and screw-

shaft 34, of carriage G<sup>5</sup> and means for preventing said carriage from turning on said shaft, sliding shaft 42, provided with springs 46 and 47, collars 41, 43, 44, and 45, clutch 40, and  
5 gears 32 33, substantially as and for the purposes set forth.

6. The combination of clutch-rod 42, screw-shaft 34, and means for rotating the same with carriage G<sup>5</sup>, provided with pins 50 and 51, and  
10 dogs 48 and 49, provided with springs 58, substantially as and for the purposes set forth.

7. The combination, with carriage G<sup>5</sup>, adapted to traverse shaft 34, and provided with pins 50 and 51, holding and guiding rod 36, and

sliding shaft 42, of spiral springs 46 and 47, 15 collars 41, 43, 44, and 45, dogs 48 and 49, springs 58, clutch 40, and gears 32 33, substantially as and for the purposes set forth.

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