(No Model.) 3 Sheets—Sheet 1.

W. H. DAILEY.

STOP MOTION DEVICE FOR BARB WIRE MACHINES.

No. 556,622. Patented Mar. 17, 1896.

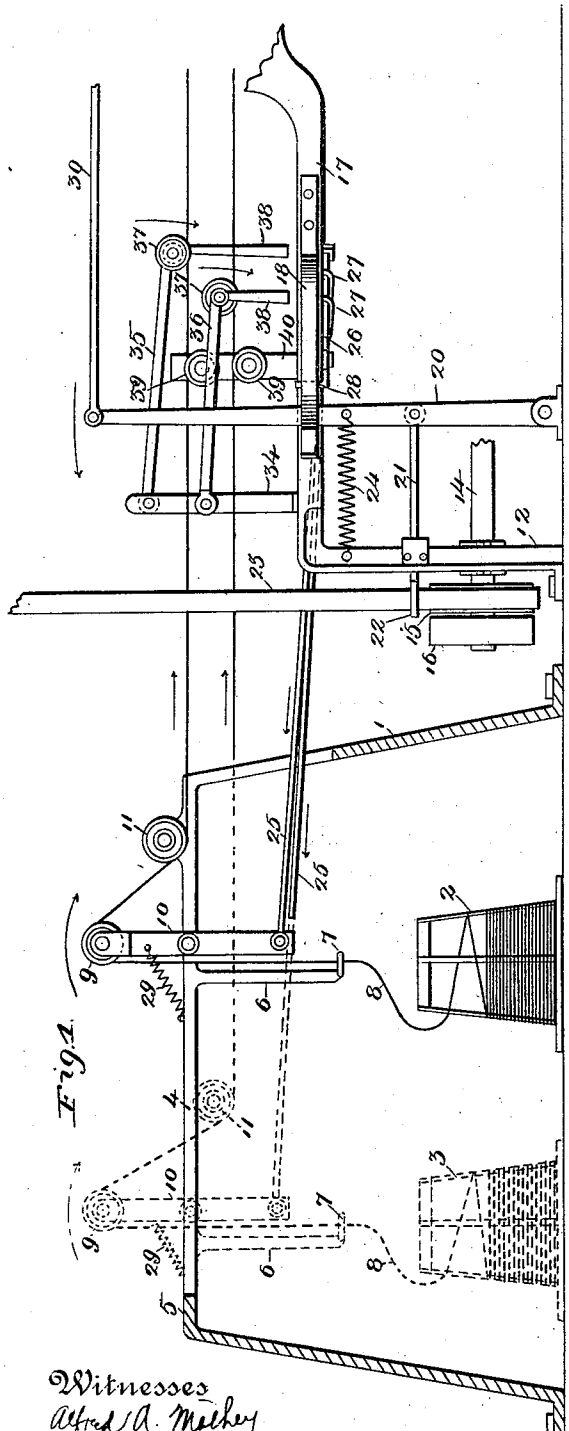

Fig. 1.

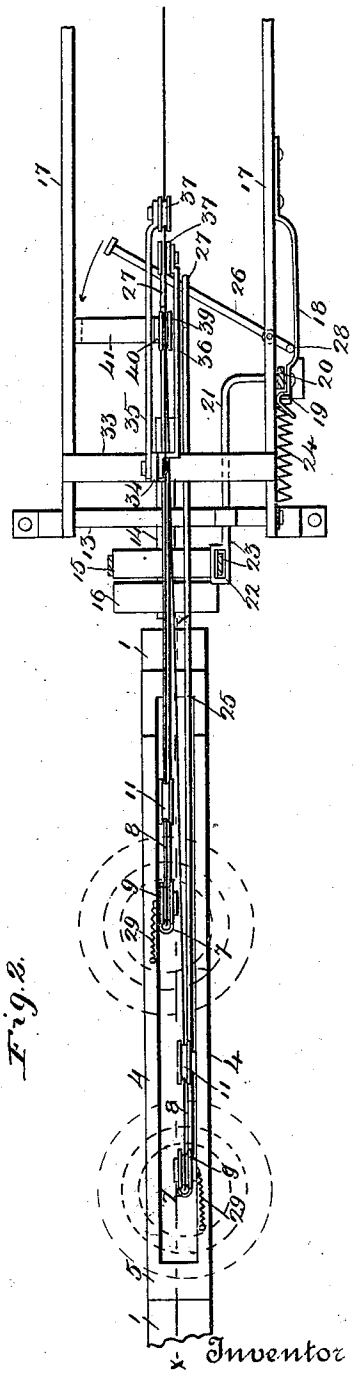

Fig. 2.

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(No Model.) 3 Sheets—Sheet 2.

W. H. DAILEY.

STOP MOTION DEVICE FOR BARB WIRE MACHINES.

No. 556,622. Patented Mar. 17, 1896.

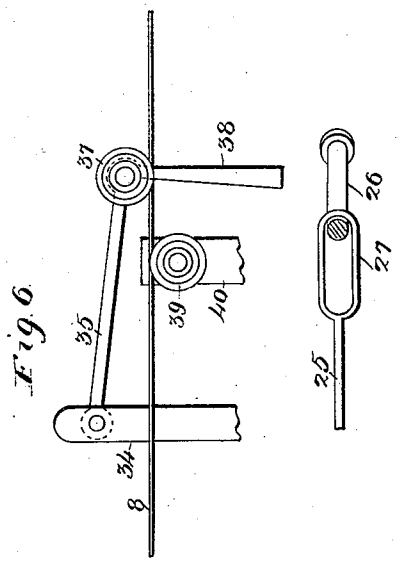


Fig. 6.

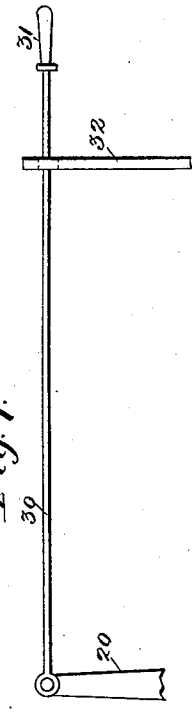


Fig. 7.

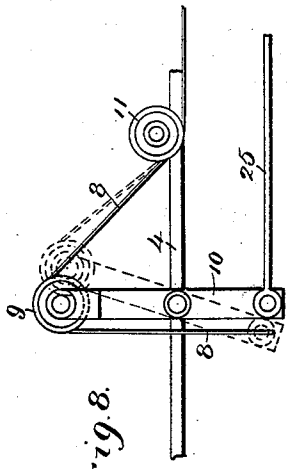


Fig. 8.

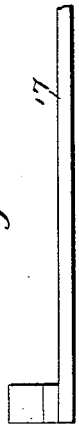
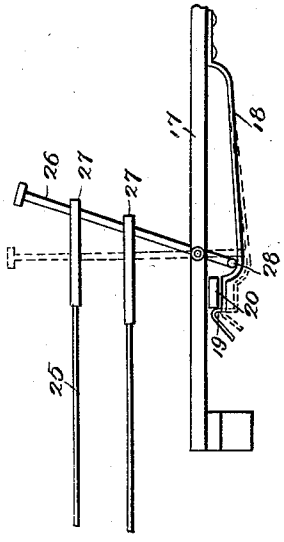


Fig. 3.



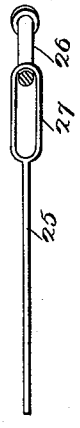


Fig. 4.

Fig. 5.

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(No Model.) 3 Sheets—Sheet 3.

W. H. DAILEY.

STOP MOTION DEVICE FOR BARB WIRE MACHINES.

No. 556,622. Patented Mar. 17, 1896.

Fig. 11.

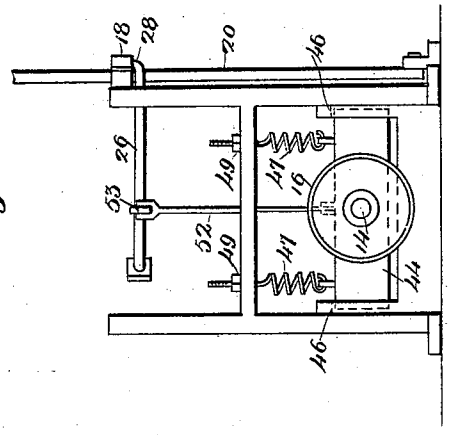


Fig. 9.

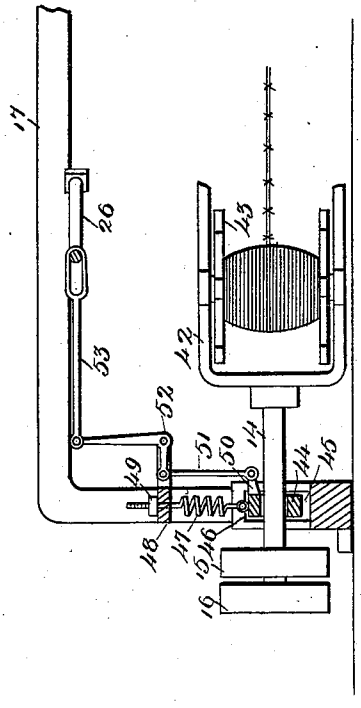
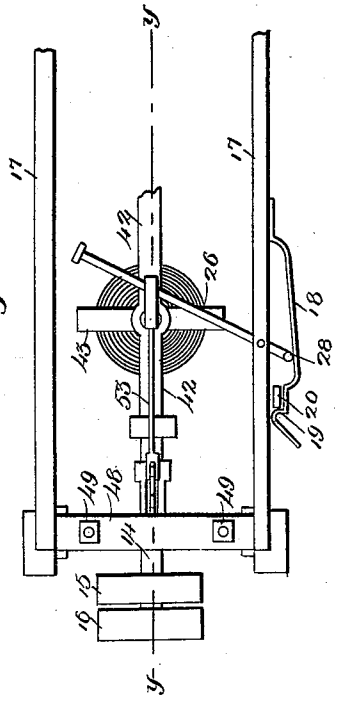


Fig. 10.



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UNITED STATES PATENT OFFICE.

WILLIAM H. DAILEY, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO JAMES H. BRIGHT, OF SAME PLACE.

STOP-MOTION DEVICE FOR BARB-WIRE MACHINES.

SPECIFICATION forming part of Letters Patent No. 556,622, dated March 17, 1896.

Application filed December 21, 1895. Serial No. 572,907. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. DAILEY, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Barb-Wire Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in barb-wire machines; and it consists in the novel arrangement and combination of parts more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a side elevation of my invention, showing the reel-frame in section on the line *x x* of Fig. 2. Fig. 2 is a top plan view of my invention. Fig. 3 is a detail plan of the tripping-bar 26 and parts co-operating therewith. Fig. 4 is a detail showing the connection of one of the controlling-rods with the tripping-bar. Fig. 5 is a detail plan of the tripping-bar. Fig. 6 is a detail elevation of one of the weighted levers controlled by the wire of the machine. Fig. 7 is a detail elevation of the main operating-rod by which the belt-shifting mechanism may be operated. Fig. 8 is a side elevation showing in detail one of the tilting levers mounted on the main frame. Fig. 9 is a vertical section on the line *y y* of Fig. 10, showing the weighing-reel and manner of its connection with the tripping-bar. Fig. 10 is a top plan view of Fig. 9, and Fig. 11 is an end view thereof.

My present invention has for its object the construction of a barb-wire machine which will automatically come to a stop upon either the kinking of the wire fed thereto, upon the exhaustion of said wire from the reel which supplies the same, or upon the winding of a sufficient quantity of the completed barb on the reel on which it is weighed.

The present device is illustrated in connection with a double-wire machine, but may be applied to a machine feeding a single wire.

The barb mechanism proper—that is, the mechanism which twists the wire during the construction of the barb—is not here illustrated in all its details, as that is old and forms no part of my present invention.

In detail the device may be described as follows:

Referring to the drawings, 1 represents an open frame within which are located the stationary reels 2 and 3, respectively. From the lateral members 4 4 of the open or slotted top 5 of the frame depend the arms 6 6, each provided with an eye 7 at its lower end, the wires 8 8 from the reels passing through the respective eyes and over the terminal pulleys 9 9 of suitable tilting levers 10 10, pivoted approximately along their medial portions to the inner surfaces of the members 4 4. After the wires leave the pulleys 9 they pass over suitable guide-pulleys 11 11, mounted in the frame, the wires thence being carried forward to the barb-twisting device or reel proper. (Shown in Figs. 9 and 10.) Located in the path of the wires and disposed on either side thereof at a suitable distance from the frame 1 are uprights or posts 12, connected near their bases by a connecting-beam 13, which supports the driving-shaft 14, whose outer end carries the tight and loose pulleys 15 and 16, respectively. Forming a part of each post 12 is a horizontal bracket 17, along the outer side of one of which is secured one end of a resilient spring-plate 18, whose free end has an inwardly-deflected portion or hook 19 normally adapted to engage with the medial portion of a lever 20, pivoted at its base and carrying a pivoted link 21, whose looped end 22 embraces the driving-belt 23.

Secured respectively to the pivoted lever 20 and post 12 at a point above the connecting-link 21 are the opposite ends of a coiled spring 24, whose tendency is to draw or tilt the pivoted lever 20 toward the belt 23, and thus, upon a release of the said lever 20 from its engagement with the deflected end of the spring-plate 18, the effect will be to shift the belt from the tight pulley 15 to the loose pulley 16, when the machine will come to a stop.

The lower end of each tilting lever 10 is connected pivotally by means of a controlling-rod 25 to the long arm of a tripping-bar 26 pivoted along the lower edge of one of the brackets 17, the connection between the tripping-bar and controlling-rods being effected by the loops 27 of the rods embracing the said bar. The short arm of the tripping-bar car-

ries a finger 28, which normally bears against the inner surface of the spring-plate 18. (See Fig. 2.) Now if a kink occurs in either wire as it unwinds from the reel, said kink will encounter the eye 7, thus interrupting the free passage of the wire through the eye, and creating such an increased tension on the wire that as the latter is being drawn in the direction shown by the arrows in Fig. 1 it will trip the particular tilting lever 10, as indicated by the arrows in Fig. 1. (See also Fig. 8.) As the lever 10 is thus tilted the lower end of the same will retract the controlling-rod 25 secured thereto, the looped end of the controlling-rod in turn tripping the tripping-bar sufficiently to cause the finger 28 at the end of the short arm thereof to bear against the spring-plate 18 and disengage its deflected portion 19 from the lever 20, whereupon, as the latter is released, it will be drawn by the spring 24 in the direction as indicated by the arrows, shifting, through the medium of the connecting-link 21, the belt from the tight to the loose pulley. When the kink is removed the levers 10 are restored to their normal position by the spring 29 having one end secured to the member 4 and the opposite end to the lever above its pivotal point. To restore the lever 20 into engagement with the deflected end 19 of the spring-plate 18 I provide an operating-rod 30, the handle portion 31 of which may be grasped by the operator, and the free end of the rod being supported on the forked end of a standard 32 located conveniently in proximity to the remaining portions of the machine.

Thus far I have described the operation of the machine in case of the kinking of the wire. I shall now describe the mechanism by which the machine is brought to a stop upon the termination or exhaustion of either length of wire from the reel which supplies it: Adjacent to the connecting-beam 13 is a transverse brace-bar 33, from the middle of which projects upwardly a standard 34, on opposite sides of which and superposed over one another are pivoted the weighted levers 35 36, each provided at its free end with a roller 37 adapted to ride over the wire, and each lever being weighted by a suitable depending arm 38. Each wire is also guided by the pulleys 39 39 mounted on the side of the vertical member 40 of a bracket 41 secured to one of the brackets 17.

Should either of the wire lengths become exhausted and thus fail to support the weighted lever 35 or 36, the said lever will drop or swing downwardly about its pivotal point, the depending arm 38 in its downward-sweeping circular motion striking the side of the tripping-bar 26 and tilting it in the direction as shown by the arrow in Fig. 2, whereupon the shifting of the belt occurs, as described in connection with the previous operation.

Referring particularly to Figs. 9 to 11, 42 represents the frame of the winding and twisting reel 43 mounted on the shaft 14, which in this case is mounted in a bearing 44 movable up and down in guideways 45 of the posts 12. The upward movement of the bearing 44 is limited by the terminal or abutting wall 46 of the guideway. The bearing is suspended from a series of springs 47, whose upper ends are secured to a cross-beam 48 by the nuts 49. The tension of the springs can be increased by screwing down the nuts after the upper edge of the bearing has come in contact with the abutting wall 46. To the bearing 44, or rather to a projecting arm 50 of the same, is pivotally connected one end of a link 51, whose opposite end is pivotally secured to the end of the short arm of a bell-crank lever 52, whose long arm is in turn connected by a looped connecting-bar 53 with the tripping-bar 26. After a certain quantity or weight of wire has been wound on the reel 43 said weight will cause the bearing of the shaft carrying the reel to drop slightly in its bearings, against the resilient action of the springs 47, (this dropping being permitted on account of the slack in the belt driving the pulley 15,) pulling down on the link 51 and tripping or tilting the bell-crank lever 52 sufficiently to cause the long arm thereof to trip the tripping-bar sufficiently to disengage the spring-plate 18 from the pivoted lever, 20 and thus shift the belt as in the previous operations. If it is desired to increase the weight of wire on the reel 43 before the latter pulls down the bearing, the tension of the supporting-springs 47 is adjusted as above indicated, when of course it will require an increased weight to overcome the resiliency of said springs.

Having described my invention, what I claim is—

1. In a barb-wire machine, a series of wire-supply reels, suitable devices for guiding the wire from said reels, suitable mechanism for unwinding said wire, a belt for driving said mechanism, a belt-shifting device for said belt, a weighted lever pivoted at one end and having its free end resting on the wire, and a tripping-bar controlling the belt-shifting device and adapted to be tripped by the free end of the weighted lever upon release of the same when the wire from the reel is exhausted, substantially as set forth.

2. In a barb-wire machine, a series of supply-reels, suitable guide-pulleys for the wire, suitable driving mechanism for unwinding the wire, an eye carried by the frame of the machine and adapted to intercept any kinks in the wire, a tilting lever pivoted to the machine-frame and adapted to be tilted by the wire due to increased tension of the wire on one end of the tilting lever, a controlling-rod pivotally secured to the opposite end of the tilting lever, a tripping-bar having one end connected to the opposite end of the controlling-rod, whereby upon the tilting of the tilting lever, the controlling-rod trips the tripping-bar, and suitable belt-shifting mechanism operated by the tripping of the tripping-bar, substantially as set forth.

3. In a barb-wire machine, a suitable spring-controlled lever pivoted at its base, a driving-belt, a link connecting said lever with said belt, a spring-plate having one end secured to the frame of the machine, a deflected end or hook at the free end of the spring-plate adapted to normally engage with the pivoted lever, a tripping-bar pivoted to the frame of the machine and having a terminal finger normally bearing against the spring-plate, and means for tripping said bar upon either a termination of the wire, or kinking of the same, and thus shifting the belt, substantially as set forth.

4. In a barb-wire machine, a suitable lever pivoted at one end, a pulley at its free end adapted to ride over the wire, a weighted arm depending from the free end of the lever, a pivoted tripping-bar, having a long and short arm, the long arm being adapted to be struck on the side in the event of the exhaustion of the wire and the dropping of the weighted end of the lever, substantially as set forth.

5. In a barb-wire machine, a suitable winding-reel, a shaft for the same, adjustable or yielding bearings for said shaft, a bell-crank lever controlled by the downward movement of the said bearing, a tripping-bar, and intermediate connections between the bell-crank lever and the tripping-bar for tripping the latter upon a predetermined quantity of wire being wound on the said reel, substantially as set forth.

6. In a barb-wire machine, a driving-shaft, a movable bearing for the same, guideways for the opposite ends of said bearing suitable springs for supporting said movable bearing, and adjusting devices for varying the tension of said springs, substantially as set forth.

7. In a barb-wire machine, a series of wire-supply reels, suitable devices for guiding the wire from said reels, suitable mechanism for unwinding said wire, a belt for driving said mechanism, a belt-shifting device for said belt, a weighted lever pivoted at one end and having its free end resting on the wire, and suitable devices interposed between the belt-shifting device and the free end of the weighted lever for controlling the belt-shifting device upon the release of the free end of the weighted lever from the wire as the latter becomes exhausted, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM H. DAILEY.

Witnesses:

ALFRED A. MATHEY,

E. STAREK.