

(No Model.)

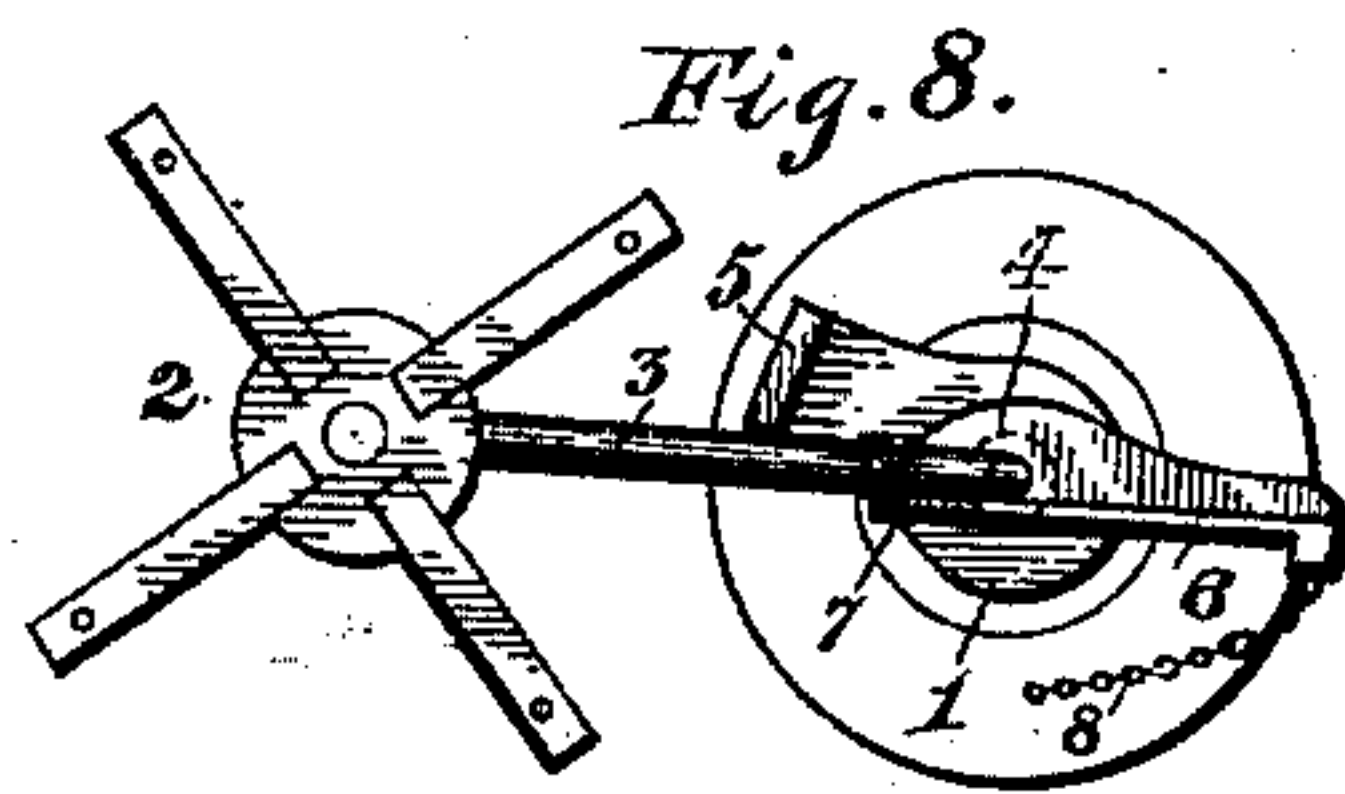
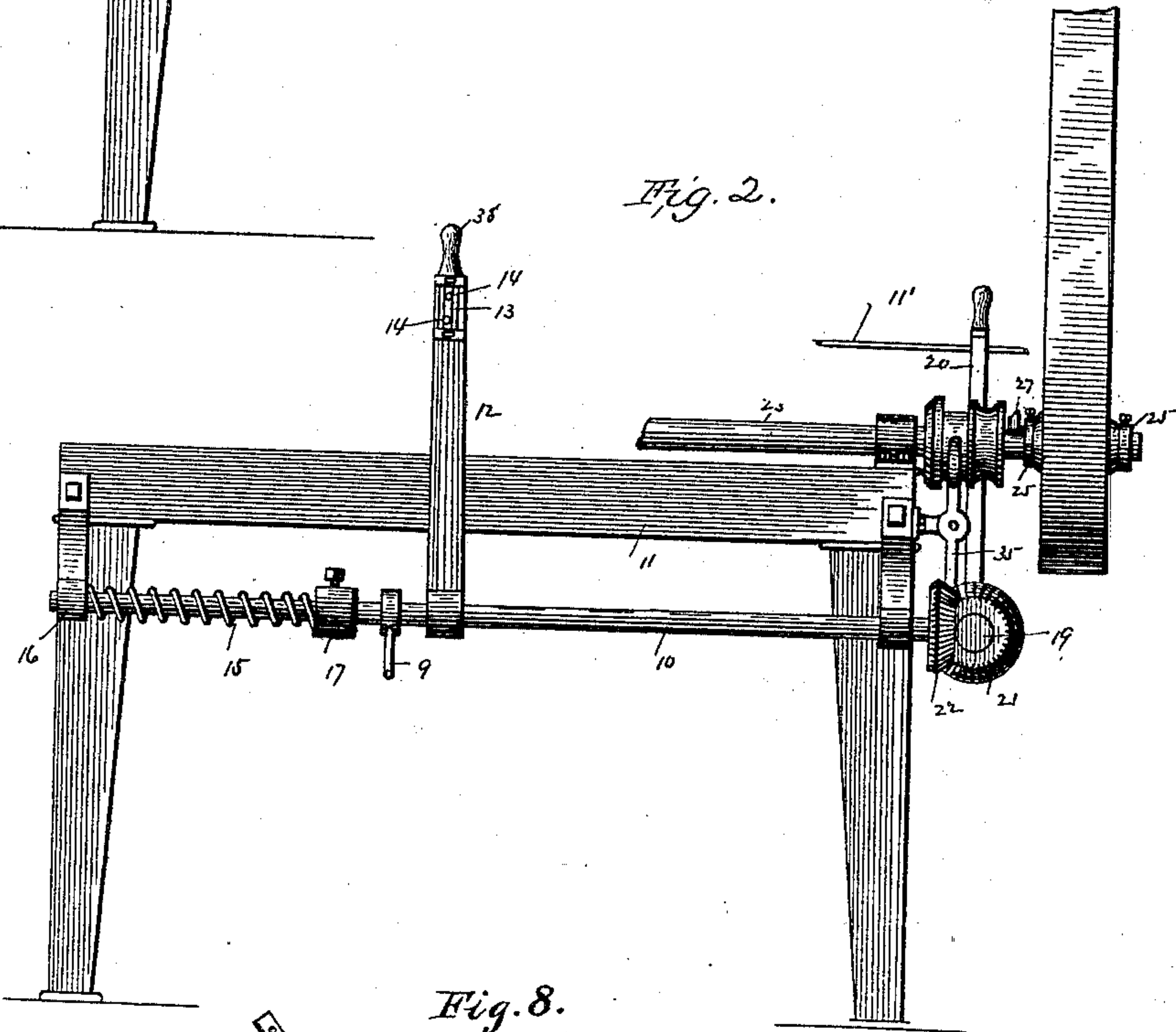
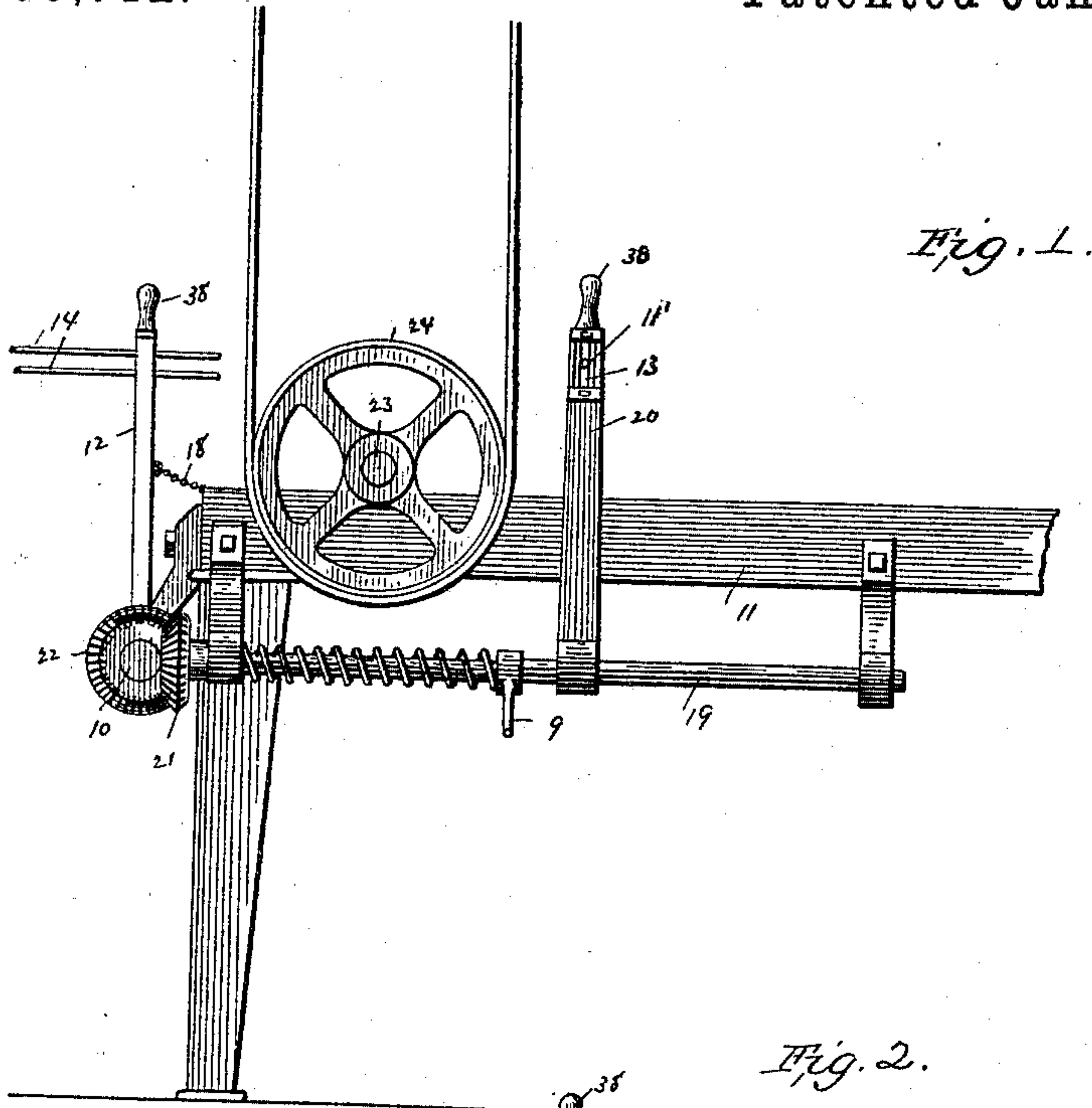
3 Sheets—Sheet 1.

A. M. MUNSON.

# AUTOMATIC STOP FOR WIRE BARBING MACHINES.

No. 395,712.

Patented Jan. 8, 1889.



WITNESSES,  
 Edwin T. Jewett.  
 Chas Helm.

INVENTOR,  
Andrew M. Munson.  
By John G. Manahan  
his Attorney.

(No Model.)

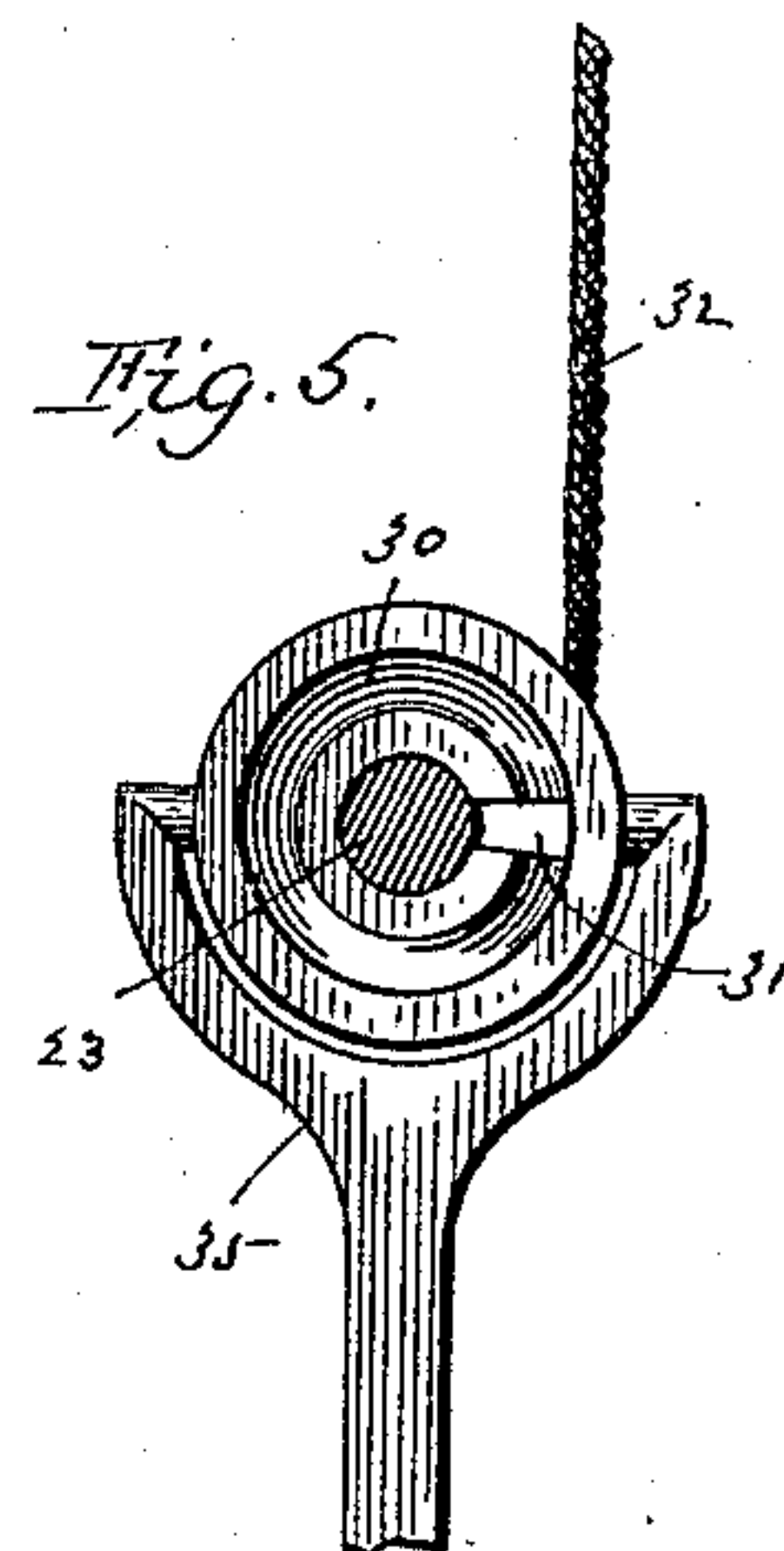
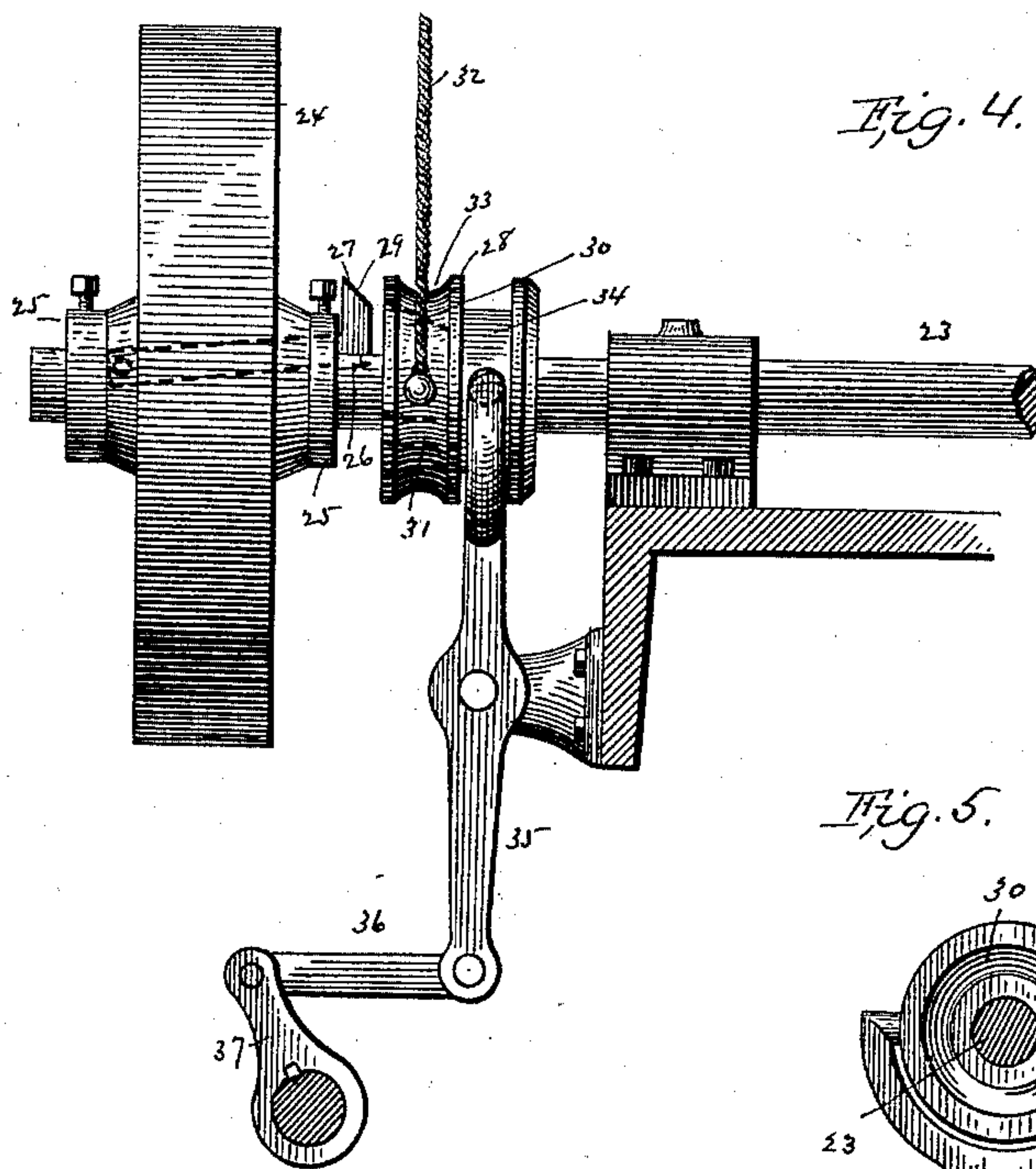
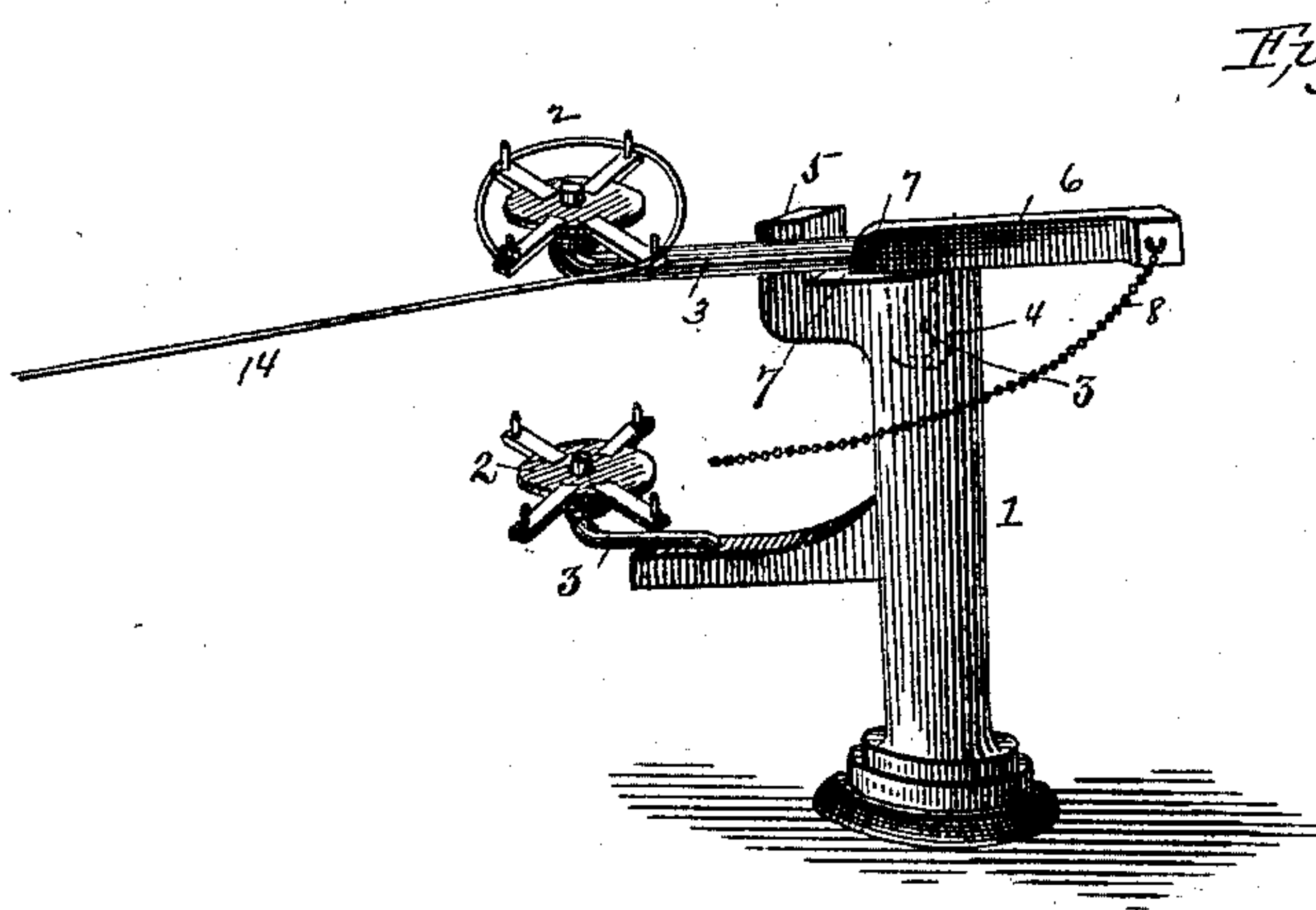
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WITNESSES.

Edwin I. Yewell,  
Chas. Helms.

INVENTOR.

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By John G. Manahan  
his Attorney.

(No Model.)

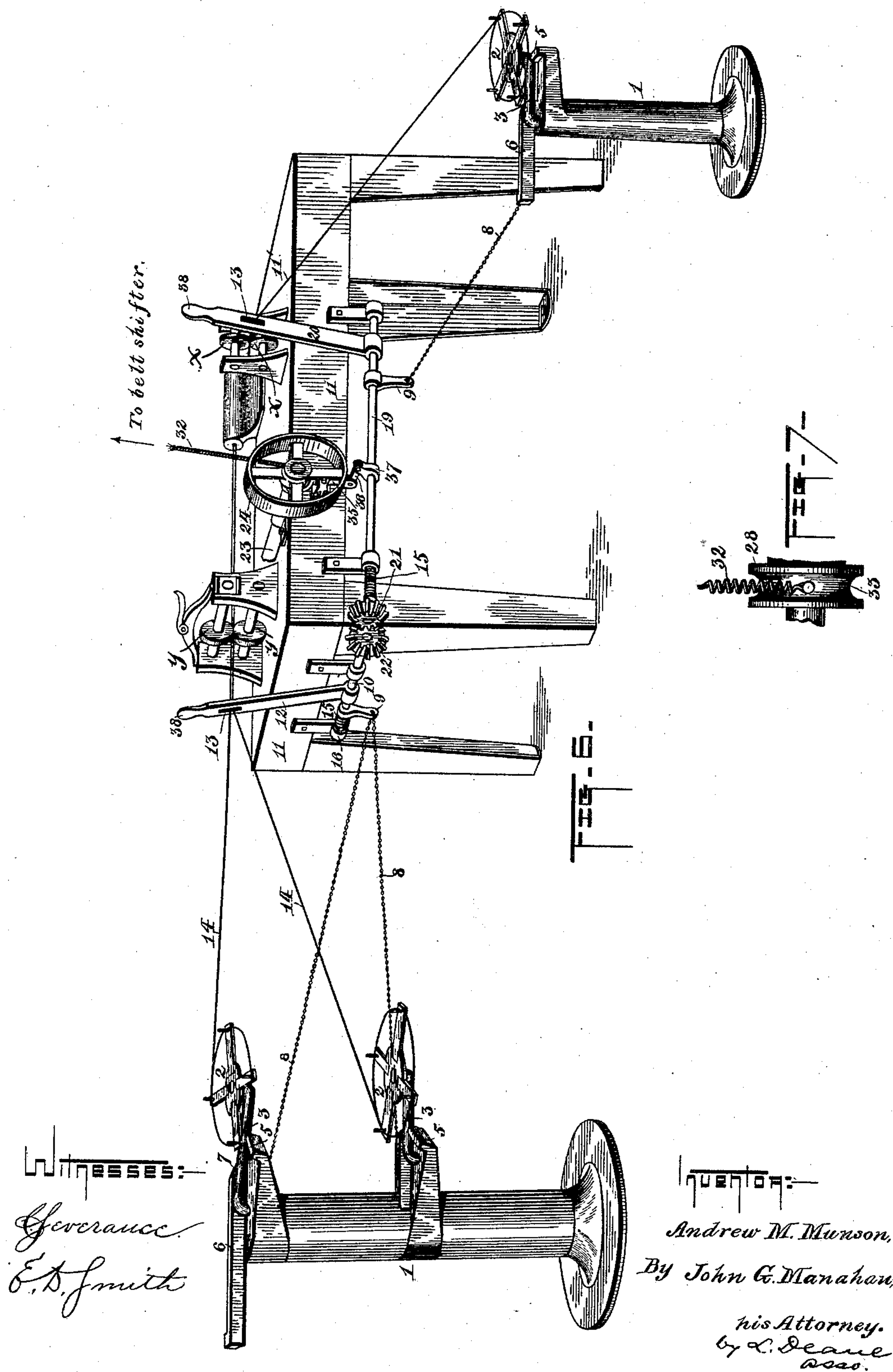
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# UNITED STATES PATENT OFFICE.

ANDREW M. MUNSON, OF LEE, ILLINOIS.

## AUTOMATIC STOP FOR WIRE-BARBING MACHINES.

SPECIFICATION forming part of Letters Patent No. 395,712, dated January 8, 1889.

Application filed June 5, 1888. Serial No. 276,081. (No model.)

*To all whom it may concern.*

Be it known that I, ANDREW M. MUNSON, a citizen of the United States, residing at Lee, in the county of Lee and State of Illinois, have  
5 invented certain new and useful Improvements in Automatic Stops for Wire-Barbing Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others  
10 skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.  
15 My invention has reference to certain improvements in machines for placing barbs upon fence-wire; and it consists, essentially, in devices for automatically stopping such machines in case of any accident to the wire  
20 as the latter is being fed to the machine, and in means for stopping the machine when the wire on the feed-reels becomes exhausted. Barb fence-wire is now exclusively manufactured by machines in which one or more  
25 fence-wires are fed to the machine from rotating reels, and the wire from which the barbs are cut is fed to the machine at right angles to the feed of the main wire or wires. The expense of manufacturing is largely determined by the number of machines which  
30 one man can operate. Both the main wires and barbing-wires are drawn through a guiding-sleeve or hollow cylinder by the feed-rollers, such guiding-sleeve being necessary to  
35 deliver the wire at the proper locality upon the rollers and to cause said wire to cross said rollers in a direct line. It frequently occurs that there are knots or splices in the wire, which catch at the entrance or within said  
40 sleeve, and thereby prevent the further progression of such lodged wire. As the wires are fed with considerable rapidity, the stoppage of one wire will cause a breakage between it and the twister, in which event the  
45 other wires will be fed into and clog the machine; but whatever the precise result, it is obvious that the stoppage of any one of the three wires will work confusion and disaster within the machine. Again, frequently the  
50 wire in the process of being withdrawn from the reels upon which it is preliminarily coiled will become tangled, so as to prevent the fur-

ther uncoiling of such wire from said reels and suspend the progress of such wire, with the same result as though said wire had  
55 caught on the sleeve, as aforesaid. Again, there are no less than three reels to be constantly watched by the operator, that the wire on them or some of them does not become entirely used up or tangled. These things re-  
60 quire a constant watchfulness on the part of the operator and, requiring him to constantly keep his eyes on the machine, limit the number of machines which he can superintend. My invention has reference to the provision  
65 of certain devices by which any of these accidents to or interruptions of the feed of any of the wires, as well as the exhaustion of the latter at the feed-reels, can be utilized to automatically stop the machine without the direct  
70 interference of the operator. It is obvious that this is a great advantage and will increase the number of machines which any one operator can superintend, because if the machine can be made self-stopping in case  
75 the wire on the reels shall become exhausted, or in case of any interruption or suspension of the feed of said wires, the said machine will not require such close and continuous watch-  
80 fulness on the part of the operator as though he were required to personally stop the machine immediately upon the occurrence of any of these interruptions.

As my invention is intended, with, perhaps, slight and self-suggesting variations, to be  
85 applied to any of the various forms of barb-machines, and has reference solely to causing the lodging or catching of the wire to automatically suspend the operation of the machine, I do not deem it necessary to show or  
90 describe the particular operation of the barbing-machine any further than will render intelligible the mode of attachment thereto and operation of my invention.

In the drawings, Figure 1 is a side elevation  
95 of a portion of the frame of an ordinary barb-machine with my invention attached thereto. Fig. 2 is an end view of the same. Fig. 3 is a detail of the reels from which the wire is un-  
100 coiled in the process of barbing and the peculiar mode in which said reels are seated. Figs. 4 and 5 are details of means of applying the stop to the machine. Fig. 6 is a perspective view of the machine. Fig. 7 is a detail



showing a spiral spring instead of rope for the connection. Fig. 8 is a detail in top plan of the standard and reel.

The standards 1, upon which the wires are pivoted, are placed slightly out of the perpendicular, with their upper ends slanted from the machine, in order that the reels 2, which are pivoted on the outer ends of the pivoted horizontal arms 3, may, from the weight of the wire thereon, swing backward away from the machine and have their normal position at the side of said standard 1. Each arm 3 consists simply of a round bar having a horizontal central portion, its outer end bent upward to form the pivotal seat for one of the reels 2, and its inner end bent downward and inserted loosely in the socket 4 in the top of the standard 1. The top of the standard 1 is projected outwardly to form a support for the arm 3, and at its extremity is provided with stop 5, which prevents the arm 3 from swinging away from the machine sufficiently far to be in a direct line with the discharge of the wire. Any stoppage or tangling of the wire therefore on the reels 2 will tend to cause said reels to be thrown toward the machine, the arm 3 swinging around toward the machine for that purpose. A short arm, 6, is also pivoted at its inner end in the socket 4, the inner end of the arm 3 passing down through said arm 6. The pivot for the arm 6 is formed simply by a downward projection on the lower surface of the inner end thereof, which enters the socket 4 around the inserted end of the arm 3. A vertical lug, 7, is formed on the inner end of the arm 6 in position to be engaged by the adjacent portion of the arm 3 as the latter swings inward, as aforesaid, in case of the tangling of the wire on the reel 2, and the free end of the arm 6 being projected from the standard 1 in the direction opposite to that of the arm 3 tends to throw the outer or free end of the arm 6 from the machine.

Two reels are placed on one standard at different altitudes, and one at the top of the other. A chain, 8, connects the outer end of arm 6 with the downward-projected arm 9, seated upon the horizontal rock-shaft 10, suitably journaled to the end of the frame 11 of the main machine. Thus any tangle or stoppage in the uncoiling of the plain wire from the reel 2 will result in drawing toward the machine the reels 2 and moving in a substantially horizontal plane the arm 3, and thereby moving from the machine the outer arm, 6, and through the medium of the chain 8 and arm 9 rocking the lower portion of the shaft 10 of the machine.

The transmission of this rocking movement to the devices for stopping the machine will be hereinafter described. The last end of the wire can be knotted or fastened to the reel so as to draw when the wire is exhausted.

12 is a lever seated vertically on the rock-shaft 10 about centrally and in the line in which the wire passes from the reel 2 to the

barbing mechanism. The lever 12 is provided near its upper end with the vertical slot 13, of such width as to permit the plain wires 14 to easily pass through said lever in their movement toward the barbing mechanism; but the slot 13 is not wide enough to permit the passage of a splice-knot or other enlargement on the wires 14. Therefore such enlargement or knot, which would otherwise catch at the sleeve aforesaid, (which is between the lever 12 and barbing mechanism,) is not permitted to proceed farther than the lever 12, and the catching of the latter has the effect to draw said lever toward the machine, and thereby rock inwardly the shaft 10, as before described in reference to a tangle on the reels. A coiled spring, 15, is placed on the shaft 10, near one end thereof, and has one of its ends inserted in a box, 16, which forms one of the journal-bearings of shaft 10, and has its other end inserted in a collar, 17, on said shaft, and serves to throw the lever 12 back into position after the pressure of the obstruction on the wire has been removed. The collar 17 is seated by means of an ordinary set-screw, and thereby the tension of the spring 15 can be regulated as desired by twisting said collar 17 on the shaft. A short chain, 18, can be used to connect the lever 12 midway to the frame 11 and prevent said lever from being thrown too far back by the spring 15. The slot 13 is used rather than a hole, so as to permit the oscillation of the lever 12 without forcing the wires 14 up or down. The walls of the slot 13 can be made of removable steel rods adjustable to and from each other.

A shaft, 19, corresponding in function to the shaft 10, is journaled horizontally to the side of the frame 11, near the reel 2, at the right hand, which contains the wire to be cut into barbs, and is located a short distance from the side of the machine, and operates substantially as has been described in reference to the main-wire reels 2, and is also adapted to actuate the arm 6, as has been before described, which latter is connected by chain 8 to the second arm 9, seated on shaft 19; and on shaft 19 is also seated a second lever, 20, provided with vertical slot 13 for the passage through lever 20 of the wire 11' for barbing, and the functions of the shaft 19, lever 20, and slot 13 therein are substantially the same as those mentioned in reference to the like end mechanism. The shaft 19 is provided at its end contiguous to the end of the shaft 10 with the bevel-pinion 21, and the shaft 10 at its end adjacent to the end of the shaft 19 is provided with a like bevel-pinion, 22. The oscillation, therefore, of the shaft 10 is communicated through the pinions 21 and 22 to the shaft 19, so that the lever 20 is oscillated, whether the obstruction of the wire takes place on either lever 12 or 20, and when the stoppage of the uncoiling of the wire occurs on any of the reels 2, or any obstruction occurs of the character named, each has the effect to rock the lever 20 toward the machine. The inward



rocking of the lever 20 is utilized to stop the machine in the following manner: It may be premised that the barbing portion of the machine is usually driven from a belt-pulley removably keyed to the main driving-shaft, while the twisters for twisting together the main wires after one or both have been barbed are driven by an independent belt from the same shop-shaft which drives said driving-pulley, and therefore in order that the twisters may not continue to run after the barbing process has been suspended it is necessary to coincidentally stop both the barbing mechanism and the twisters.

Referring to Fig. 4, 23 is the main driving-shaft of the barbing-machine, upon which is seated belt-pulley 24, which latter carries and is driven by the ordinary belt from the shop-shaft. The pulley 24 is held from lateral movement on the shaft 23 by means of collars 25, attached on said shaft at each side of said pulley by means of ordinary set-screws. A longitudinal slot, 26, is formed on the upper side of the shaft 23, extending a short distance within the inner collar, 25, and in said slot is seated the usual key, 27, pivoted at one end, and thereby adapted to be embedded in said slot or to be thrown out into engagement with a corresponding recess formed on the inner surface of the hub of the drive-pulley 24. (Not shown.)

A spring (not shown) is interposed between the back of the key and bottom of the recess 26, which holds said key outward and in engagement with the recess aforesaid in the inner wall of the hub of the drive-wheel 24.

The parts just described for attaching and detaching the pulley 24 to its shaft are old and well known, and I do not deem it necessary to make special description thereof. My invention in this department has more special reference to the mode of forcing said key 27 down into its bed and releasing pulley 24 by means of intermediate mechanism communicating the oscillation of shaft 19 to a shifting collar 28, seated loosely on shaft 23. The inner end of the key 27 is projected slightly within the collar 25, and is provided with a lateral head, 29, extending outward from the shaft and beveled downward and inward, as shown in Fig. 4. The collar 28 has formed on its face adjacent to key 27 an annular opening, 30, flaring outward, (see end view thereof in Fig. 5,) which opening, when the collar 28 is slipped outward on shaft 23, as hereinafter described, passes over the head 29 of key 27 and forces the latter back into recess 26, and thereby releases the drive-pulley 24 and permits the latter to turn upon the shaft 23 without communicating rotation to the latter.

In the opening 30 is formed a stop, 31, which engages the head of the key 27 as the latter, by the momentum of the shaft 23, is carried around the opening 30, and in such engagement such momentum imparts a degree of rotation to collar 28 sufficient to wind thereon an attached rope or chain, 32, the upper end

of which is passed over a pulley and attached in any suitable way to the ordinary shifting-lever for shifting the belt on the counter-shaft aforesaid, which drives the twisters, from the fixed pulley on said shaft to an idler thereon. The lower end of the rope or chain 32 is attached to the periphery of the collar 28 in the external annular groove, 33, therein, and inasmuch as the required momentum of the shaft 23 may vary at different times it would be well to have a portion at least of the rope or chain 32 consist of a spiral spring, that unusual winding of the lower end of said rope might not break the latter or any of the upper parts to which it is attached. As the mode of attaching the upper end of the rope or chain 32 to the ordinary shifting-lever and the operation of the latter are well known, I do not deem it necessary to show or describe the same.

The collar 28 is provided with a second annular groove, 34, parallel with and inside of groove 33. A vertical lever, 35, is pivoted about centrally to the frame 11, and is provided at its upper end with a clutch to enter and loosely traverse the groove 34. The lower end of the lever 35 is connected by means of pitman 36 to an arm, 37, rigidly formed on shaft 19, said pitman 36 being pivotally connected at one end to lever 35 and pivotally connected at its other end to arm 37.

It is obvious that the inward rocking of the upper side of shaft 19, either through the lever 20 seated thereon or from the lever 12 seated on shaft 10, through the medium of beveled pinions 21 and 22, will have the effect of forcing the lower end of lever 35 inward and the upper end of said lever outward, thereby carrying collar 28 outward and over key 27, as aforesaid. The unlocking of pulley 24, as aforesaid, and shifting of the belt which drives the twisters by means of the rope or chain 32, are substantially coincident movements, and thereby motion of both the barbing and twisting mechanism is at once suspended. After the occasion of the stopping of the machine has been removed the collar 28 may be slipped inward, disengaging the key 27 by an outward pull by the operator of either lever 12 or 20.

As numerous machines of varied constructions are used for seating barb-wire, it is impracticable in one specification to illustrate or describe the various modes by which the rocking of the lever 12 or 20 can be applied to suspend the operation of the machine.

The upper ends of the levers 12 and 20 are provided with handles 38, by which said levers can be positively moved inward and stop the machine, or can be returned to their vertical position.

While in the present instance feed-rolls to draw the wires forward from the reels are indicated at *y* and *x*, Fig. 6, I do not intend to confine myself to any special form of constructing or of operating these. Therefore it is not necessary in the present instance to



show how these rolls can be run, as any mechanic will readily understand from what is shown all that is necessary in this connection.

5 What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

1. In a wire-barbing machine provided with suitable feeding devices for drawing the wires  
10 from the reels, the combination of the standard 1, arms 3 and 6, reel 2, chain 8, arm 9, and rock-shaft 10, having pinion 22, and shaft 19, having pinion 21, and connected with means for disconnecting the driving-power from the  
15 machine, whereby the suspension of the uncoiling of the wire causes the arm 3 to swing toward the machine and rock the shafts 10 and 19, whereby the power is disconnected from the machine, substantially as shown, and  
20 for the purpose described.

2. In a wire-barbing machine provided with suitable feeding devices for drawing the wires from the reels, the combination of the standard 1, inclined from the perpendicular outwardly and provided with the stops 5 and  
25 socket 4, the arm 3, pivoted at its inner end in said standard, the reel 2, pivotally seated on the outer end of arm 3, arm 6, provided with lug 7, adapted to be engaged by arm  
30 3 in its forward swing, arm 9, seated on the shaft, and chain 8, connecting the outer end of arm 6 to the lower end of arm 9, and means connected with the shaft 10 for disconnecting the power, substantially as shown, and for  
35 the purpose described.

3. In a wire-barbing machine provided with suitable feeding devices for drawing the wires from the reels, the combination of the standard 1, inclined outward from the perpendicular and provided with the stop 5, the arms 6  
40 and 3, pivoted thereon, the reel 2, pivoted on the outer end of arm 3, the arm 6, provided with flange 7, the chain 8, rock-shaft 10, provided with arm 9, spring 15, lever 12, provided with slot 13 and pinion 22, shaft 19,  
45 provided with pinion 21 and lever 20, and means for disconnecting the driving-power of the machine, substantially as shown, and for the purpose described.

50 4. In a wire-barbing machine provided with suitable feeding devices for drawing the wires from the reels, the combination of the side standard, 1, provided with stop 5, arms 6 and 3, pivotally seated thereon, reel 2, pivoted to

said arm 3, chain 8, shaft 19, provided with  
51 arm 9, spring 15, lever 20, provided with slot 13, and means for disconnecting the driving-power, all substantially as shown, and for the purpose described.

5. In a wire-barbing machine provided with  
60 suitable feeding devices for drawing the wires from the reels, the combination of the standard 1, inclined outward from the perpendicular and provided with the arms 6 and 3, pivoted thereon, reel 2, pivotally seated on arm  
65 3, arm 6, provided with flange 7, the chain 8, the rock-shaft 10, provided with arm 9, lever 12, provided with slot 13, pinion 22, shaft 19, provided with pinion 21, lever 20, arm 37, pitman 36, lever 35, collar 28, provided with  
70 annular opening 30, and stop 31, the collar 25, shaft 23, slotted at 26, the key 27, adapted to be embedded in said slot, and the rope or chain 32, connecting with belt-shifting devices, substantially as shown, and for the purpose  
75 described.

6. In a wire-barbing machine provided with suitable feeding devices for drawing the wires from the reels, the combination of the side  
80 standard, 1, inclined outward from the perpendicular and provided with arms 3 and 6, the arm 6 having the flange 7, reel 2, the chain 8, lever 20, provided with slot 13, arm 37, pitman 36, lever 35, collar 28, and rope or  
85 chain 32, and means for disconnecting the driving-power from the machine, all arranged and interacting substantially as shown, and for the purpose described.

7. In a wire-barbing machine provided with feeding devices to draw the wire from the  
90 reels, the standard 1, the reel thereon, and the intermediate devices connecting it to the chain 8, the chain 8, the shaft 19, provided with arm 37, a pitman, 36, lever 35, sliding collar 28, provided with opening 30  
95 and stop 31, the collar 25, shaft 23, slotted at 26, the key 27, adapted to be embedded in said slot, and rope or chain 32, attached at its lower end to said collar, and suitably fastened at its upper end to the ordinary shift-  
100 ing-lever, substantially as shown, and for the purpose described.

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

ANDREW M. MUNSON.

Witnesses:

M. BELLE MANAHAN,  
M. KATE PATTERSON.