

No. 613,700.

Patented Nov. 8, 1898.

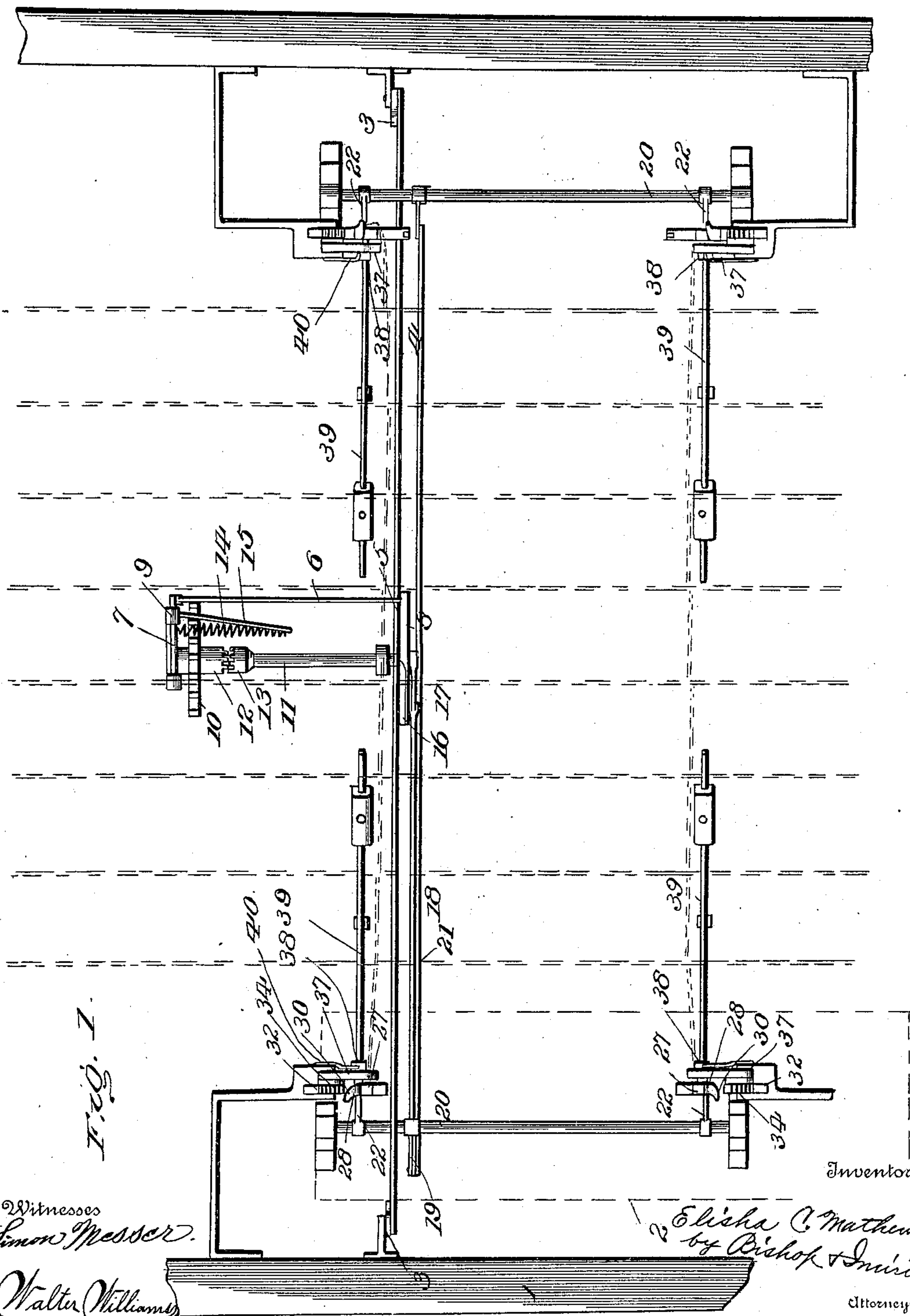
E. C. MATHEWS.

CUTTING AND HOLDING ATTACHMENT FOR FENCE MACHINES.

(Application filed Dec. 23, 1897.)

(No Model.)

5 Sheets—Sheet 1.



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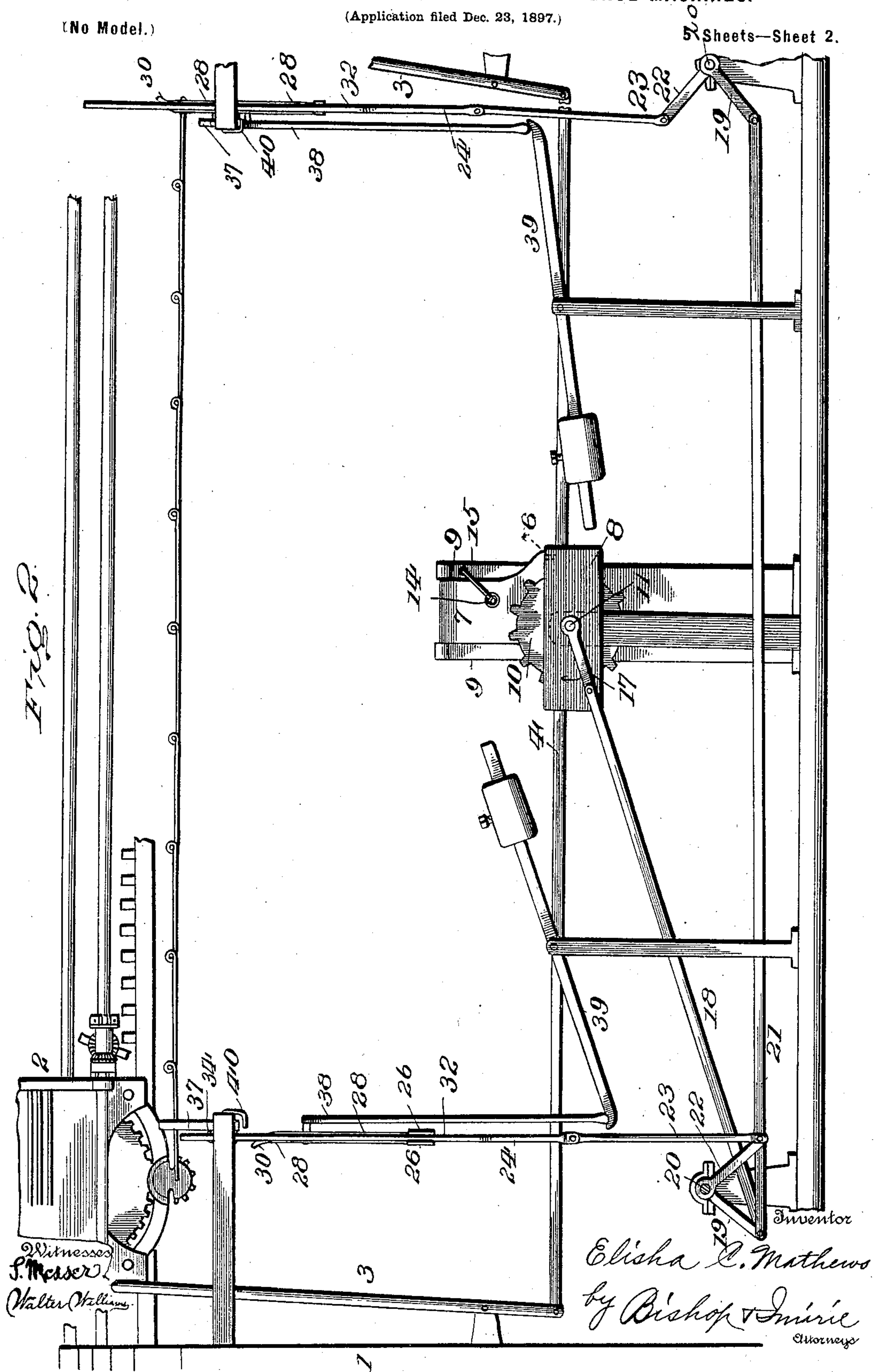
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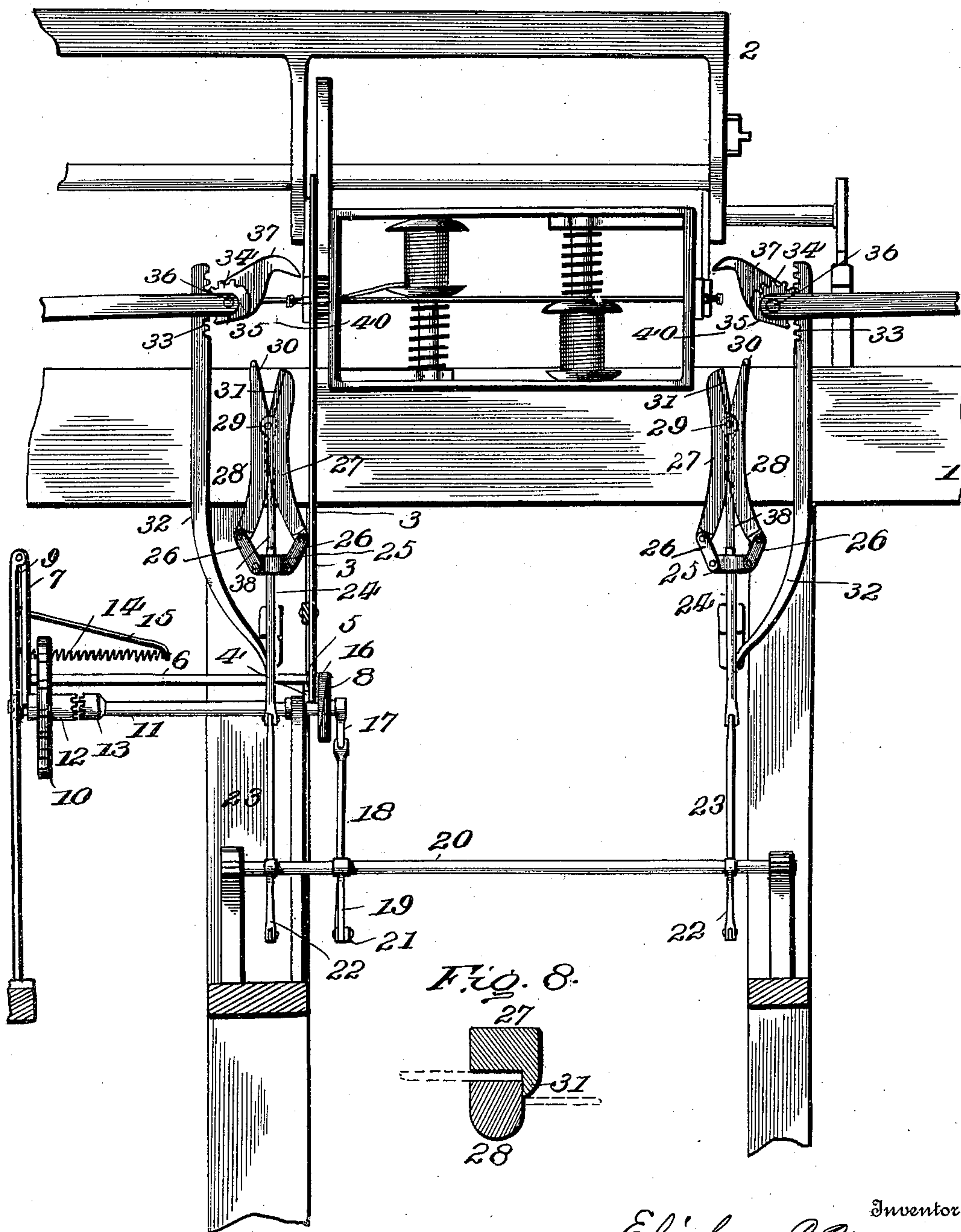
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Fig. 3.



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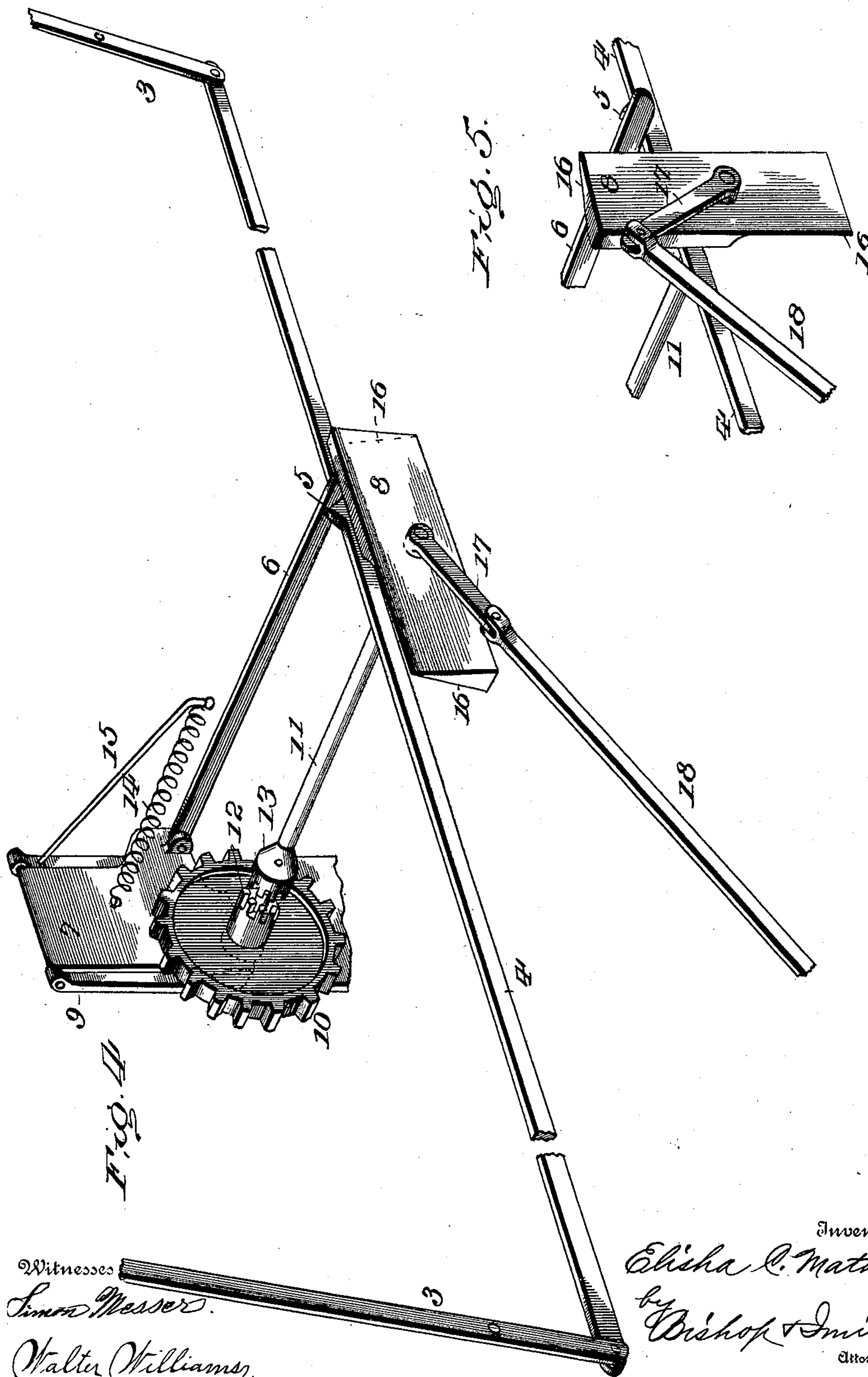
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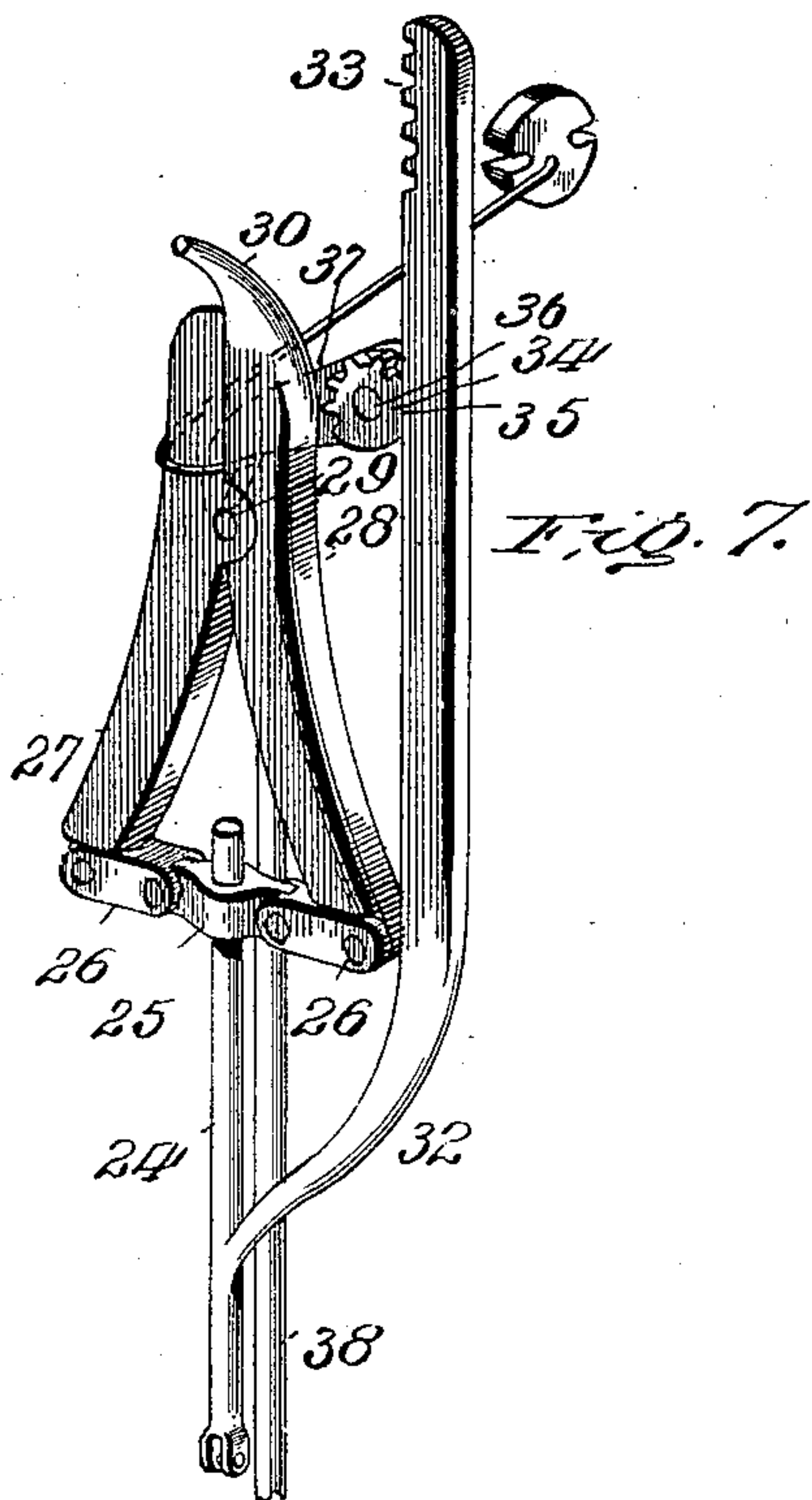
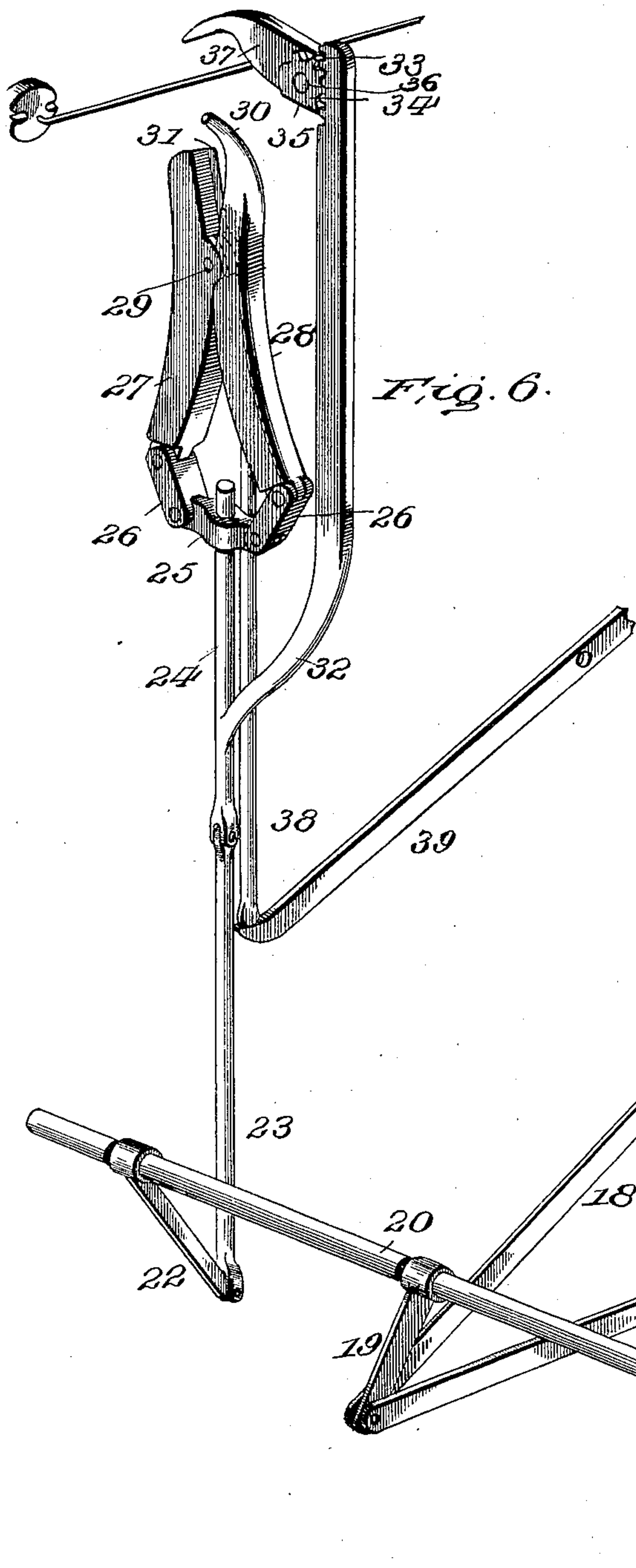
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5 Sheets—Sheet 5.



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UNITED STATES PATENT OFFICE.

ELISHA C. MATHEWS, OF JACKSONVILLE, ILLINOIS.

CUTTING AND HOLDING ATTACHMENT FOR FENCE-MACHINES.

SPECIFICATION forming part of Letters Patent No. 613,700, dated November 8, 1898.

Application filed December 23, 1897. Serial No. 663,233. (No model.)

To all whom it may concern:

Be it known that I, ELISHA C. MATHEWS, a citizen of the United States, residing at Jacksonville, in the county of Morgan and State of Illinois, have invented certain new and useful Improvements in Wire Cutting and Holding Devices for Fence-Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My present invention is a device for cutting the transverse wires of woven-wire fences and holding the ends of the said wires while being twisted onto the longitudinal wires. The device is intended more especially as an attachment for fence-machines of the type shown in Letters Patent No. 578,252 granted to me March 2, 1897; and it consists in certain novel features hereinafter first fully described and then particularly pointed out and claimed.

In the annexed drawings, Figure 1 is a plan view of a portion of a woven-wire-fence machine, showing my present invention applied thereto. Fig. 2 is a transverse section of the same. Fig. 3 is a longitudinal section thereof. Fig. 4 is an enlarged perspective view of the mechanism which controls and operates the wire cutting and holding devices. Fig. 5 is a detail view of a part of the mechanism shown in Fig. 4. Figs. 6 and 7 are detail perspective views of the wire-cutting device and the parts contiguous thereto; and Fig. 8 is a detail horizontal section of the cutter, showing the manner in which it holds the wire after it has been cut.

Referring particularly to the drawings in detail, 1 designates the frame of the fence-machine, and 2 the carriage mounted thereon and carrying the twist-ers which weave the transverse wires onto the longitudinal wires, as fully described in my above-mentioned Letters Patent.

On the frame at the sides of the machine and in the path of the carriage I pivot the levers 3, which have their lower ends connected by a bar 4, provided with a cam or beveled projection 5 on its upper side at its center.

This bar 4 passes under a pusher-arm 6, which rests on the said bar adjacent to the cam 5 and is raised by the said cam as the bar moves back and forth in the operation of the device. One end of this pusher-arm is attached to a swinging lever-plate 7, while its free end bears against a rotary head 8, which will be presently particularly described. The swinging plate 7 is pivotally supported by and between two short posts or standards 9, erected on one of the transverse beams of the frame, and one corner thereof engages the hub of a sprocket-wheel 10, loosely mounted on a shaft 11, which is journaled in suitable bearings on transverse beams of the frame, and to one end of which is secured the rotary head 8. On one face of the sprocket-wheel I form a half-clutch 12, adapted to engage a half-clutch 13, formed on the shaft 11, and thereby lock the sprocket-wheel to the shaft, so as to rotate the shaft, as will be readily understood, motion being imparted to the sprocket-wheel by a drive-chain (not shown) running from the main driving-gear of the machine. The plate 7 is drawn toward the head 8, so as to effect an engagement of the half-clutches, by a spring 14, having one end secured to the plate and its other end secured to the end of an arm 15 projecting from one of the posts 9.

The rotary head or head-block 8 has its side next the end of the pusher-arm 6 beveled reversely at its opposite ends, as indicated at 16, and rotates with the shaft 11. The end of the shaft projects beyond the head, and a crank-arm 17 is formed or secured thereon. To the end of the crank-arm 17 I pivot one end of a pitman 18, the opposite end of which is pivoted to a crank-arm 19, secured rigidly to a rock-shaft 20. A connecting-rod 21 is also pivoted to the crank-arm 19 and extends across the machine to a similar crank-arm secured on a rock-shaft corresponding in all respects to the rock-shaft 20. Near the ends of this rock-shaft 20 I secure the crank-arms 22, to the ends of which I pivot the lower ends of links 23, the upper ends of which are pivoted to the lower ends of lifter-rods 24. At the upper end of each of these rods 24 is secured or formed a cross-head 25, to the ends of which are pivotally secured the links 26, which are in turn pivoted to the lower ends

of the members 27 28 of the wire-cutter. The members of the wire-cutter are pivoted or hinged together, as shown at 29, and their upper ends act as pincers to clamp the wire.

5 One of the members, 28, is rather longer than the other and has its extremity 30 turned to one side and tapered, so that should the wire be carried beyond the space between the jaws it will be struck by this tapered point and

10 guided into the proper position. The jaw of the shorter member is provided with a lip 31, which projects over and fits against the side of the longer member, so as to have a shearing action thereon to cut the wire. Each of

15 the rods 24 has a branch arm 32 extending laterally upward therefrom, so as to clear the cutting-pincers 27 28, and then rising vertically to a slightly-greater distance than the cutter, the upper portion of the arm being

20 formed into a rack-bar 33, adapted to engage a pinion 34, having a flat mutilated portion 35 and secured on a shaft 36, which is journaled in suitable bearings on the frame of the machine a slight distance to one side of

25 the line of travel of the carriage. Secured rigidly to and extending radially from the shaft 36 is a finger or hook 37, which is adapted when the shaft is rotated to swing down upon the wire and carry it into the pincers or cut-

30 ter. The pivot 29 of the cutter is extended to one side of the same and is secured to or formed with the upper end of a holder 38, the lower end of which rests on the free end of a weighted lever 39, fulcrumed on a transverse

35 beam of the frame. The upward movement of this holder is arrested by its upper end coming into contact with a pin or stop 40, projecting from any convenient point of the frame.

40 When the carriage reaches the side of the machine, the outer side or end of the same strikes the lever 3 and throws the same toward the adjacent side of the frame. The bar 4 is thus shifted, so that the cam 5 will

45 pass under and raise the pusher-arm 6. The said arm being thus elevated above the rotary head 8 clears the same and the spring 14 at once pulls on the plate 7, so as to force the clutch members 12 13 into engagement, and

50 consequently set the shaft 11 in motion. The rotation of the shaft and the head-block 8 will continue until one-half of a revolution has been completed, when the beveled surface of the head-block will have acted on the end

55 of the arm 6, so as to push the said arm and the lever-plate 7 against the tension of the spring 14 and thereby disengage the clutch members and arrest the movement of the shaft. The mechanism then remains at rest

60 until the carriage returns to that side of the machine from which it started, when the lever 3 on that side will be struck and the operation repeated. The rotation of the shaft 11 causes a rotation of the crank-arm 17 on the inner

65 end thereof, which acts through the pitman 18 to pull on the crank-arm 19 and thereby set in motion the rock-shaft 20. The move-

ment of the shaft 20 is transmitted directly through the crank-arms 22 to the links 23, so as to raise the lifter-rods 24. The upward 70 movement of the rod 24 carries with it the members of the cutter and the said members are prevented from closing by the holder 38 rising therewith and thereby holding the pivot of the members at a constant distance from 75 the end of the rod 24, this result being accomplished by making the weight on the lever 39 slightly heavier than the cutter, so that the end of the lever will be always pressing upward against the lower end of the holder 80 and tending to raise the same. This upward bodily movement of the cutter continues until the upper end of the holder strikes the stop or pin 40, which occurs just before the crank-arm 17 completes its half-revolution. The up- 85 ward movement of the cutter being thus arrested the continued rotation of the crank-arm 17 forces the rod 24 upward a slight distance farther, consequently spreading the links 26 and throwing the upper ends or jaws 90 of the cutter together, all of which will be readily understood upon reference to Figs. 6 and 7. As the jaws come together the lip 31 moves past the opposing jaw and severs the wire between the carriage and the completed 95 fence, the end of the wire projecting from the carriage being held by and between the faces of the jaws, as shown in Fig. 8. The upward movement of the rod 24 carries the arm 32 upward and thereby causes a rotation 100 of the pinion 34, which in turn causes the finger or hook 37 to swing over and down upon the wire and bring the same over between the jaws. I thus provide against the jaws closing before they are on the wire, and to prevent 105 the hook carrying the wire out of the range of the cutter I form the flat face 35 on the pinion, which stops its rotation, and thereby limits the swing of the hook by resting against the flat edge of the rack bar or arm 32. Should 110 the wire, notwithstanding these precautions, swing slightly beyond the proper position, the tapered extremity 30 of the longer jaw will force it between the jaws. The wire being cut will be held, as above stated, until the 115 carriage travels to the opposite side of the machine, when the cutters on that side will be brought up and into operation and the cutters then holding the wires will be simultaneously released from the wires and lowered. 120

From the foregoing description, taken in connection with the accompanying drawings, it will be seen that I have provided an attachment which is of a simple character and direct and effective in operation. By its use I 125 overcome the necessity of having an attendant to hold the ends of the wires until the carriage starts to twist and to cut the wires after being twisted.

The particular form of the device illus- 130 trated is preferred; but it will be readily understood that minor changes in the details will not involve a departure from the spirit of the invention.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a device for cutting fence-wire, the combination with the cutter consisting of two members pivoted together, of a swinging finger or hook adapted to engage the wire and bring it into a position between the members of the cutter, and suitable operating mechanism.

2. The combination with the cutter, of a rotary shaft adjacent to the cutter, a finger or hook projecting radially from said shaft, a pinion on said shaft having a flat mutilated portion, a rack-bar adapted to engage said pinion and having its flat edge adapted to bear against the mutilated portion of the pinion to limit its movement, and suitable operating mechanism.

3. In a device for cutting fence-wire, a cutter consisting of two members pivoted together, one of the members having its end extending beyond the other member and turned to one side and tapered.

4. In a device for cutting fence-wire, the combination with the cutter consisting of two members or jaws pivoted together, means for moving said cutter bodily, means for holding the jaws open, and means for arresting the movement of the holding means whereby a continued movement of the cutter will close the jaws.

5. In a device for cutting fence-wires, the combination with the cutter consisting of two members pivoted together, means for raising and operating the same, a holder depending from the pivot of the members, a stop arranged in the path of the said holder, and a weighted lever bearing against the end of the holder.

6. The combination of a rotary shaft, a driving-wheel intermittently connected therewith, a pusher-arm holding said wheel normally disengaged from the shaft, and a spring acting in opposition to the said pusher-arm to connect the wheel to the shaft.

7. The combination of a rotary shaft, a driving-wheel adapted to be connected thereto, a pusher-arm holding said wheel normally disconnected from said shaft, a spring acting in opposition to said arm to connect the wheel to the shaft, a shifting-bar provided with a cam adapted to release the pusher-arm to permit the action of the spring, and a rotary head adapted to engage the pusher-arm and act on the same to disengage the driving-wheel from the shaft.

8. The combination of a shaft having a head at one end provided with reversely-beveled faces, a driving-wheel adapted to be connected to said shaft, a pusher-arm arranged adjacent to said shaft and having its end bearing normally against one of the beveled faces of the head, a swinging plate engaging the hub of the driving-wheel and connected to the pusher-arm, a spring acting on said plate in opposition to the pusher-arm, and means for disengaging said arm from the head.

9. The combination in a fence-wire-cutting mechanism, of levers arranged in the path of the fence-weaving carriage, cutters arranged at the limit of travel of the said carriage, and intermediate connections whereby when one of the levers is struck by the carriage the adjacent cutters will sever the fence-wires.

10. The combination with the fence-weaving carriage, and wire-cutters arranged at the limit of travel of the carriage, of mechanism controlled by the carriage to operate the wire-cutters.

11. The combination of the cutters, a driving-shaft, a driving-wheel intermittently connected therewith, intermediate connections between the shaft and the cutters, and means for automatically connecting and disconnecting the shaft and the wheel.

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

ELISHA C. MATHEWS.

Witnesses:

CHAS. A. BARNES,
LENA C. ENGEL.