

No. 619,758.

Patented Feb. 21, 1899.

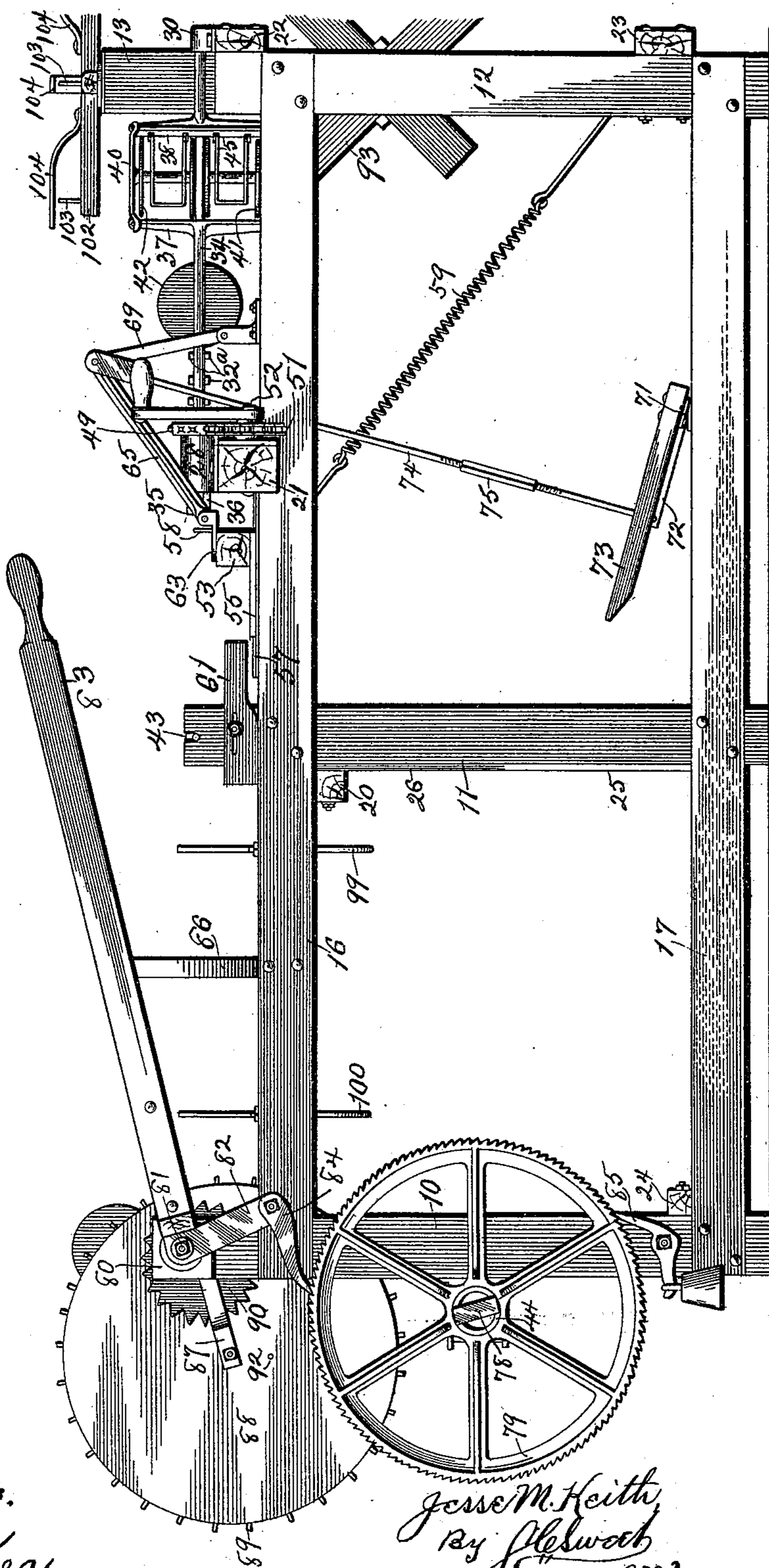
J. M. KEITH.
FENCE MACHINE.

(Application filed Oct. 18, 1897.)

(No Model.)

4 Sheets—Sheet 1.

Fig. 1



Attest:
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per J. H. Swack
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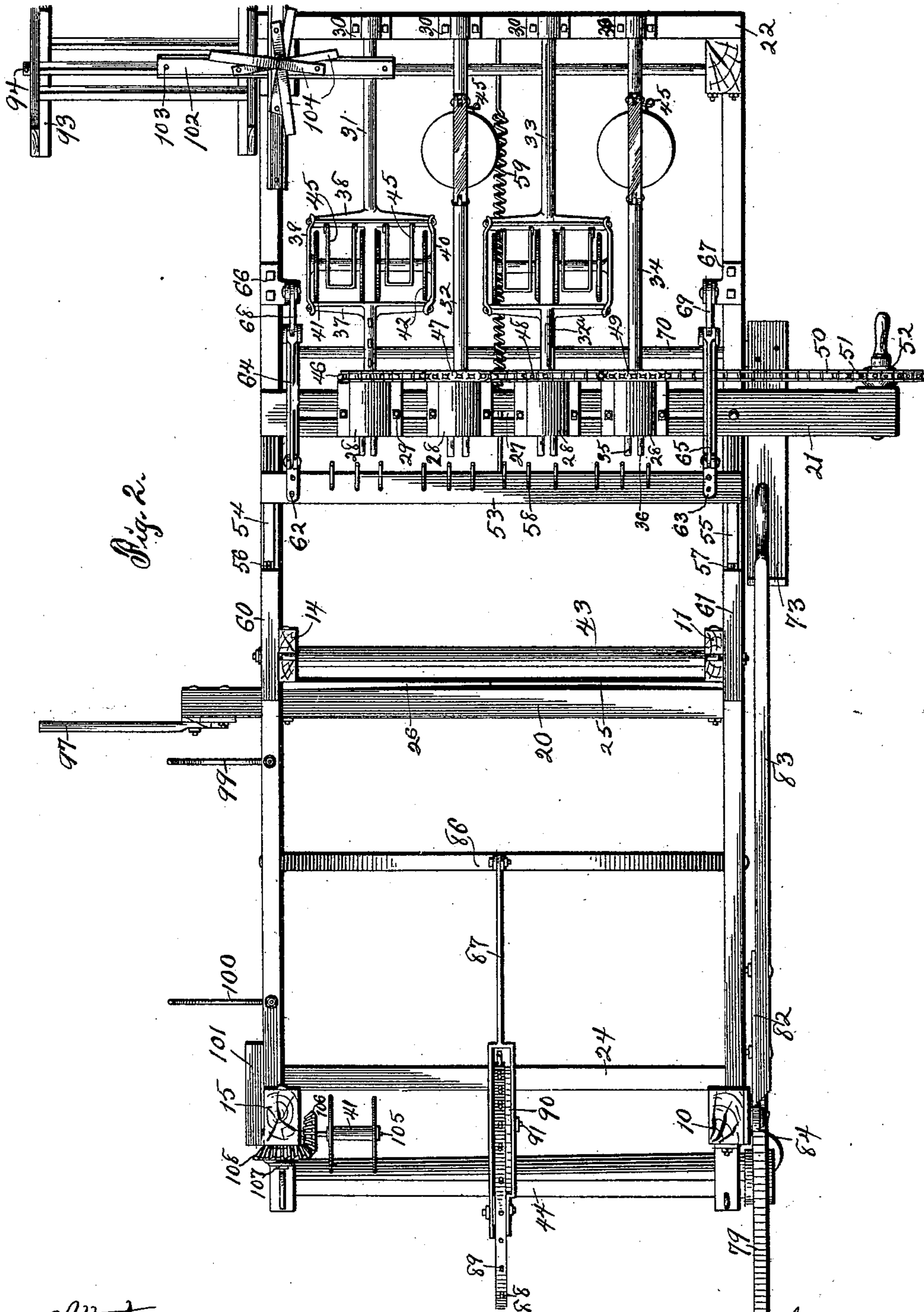
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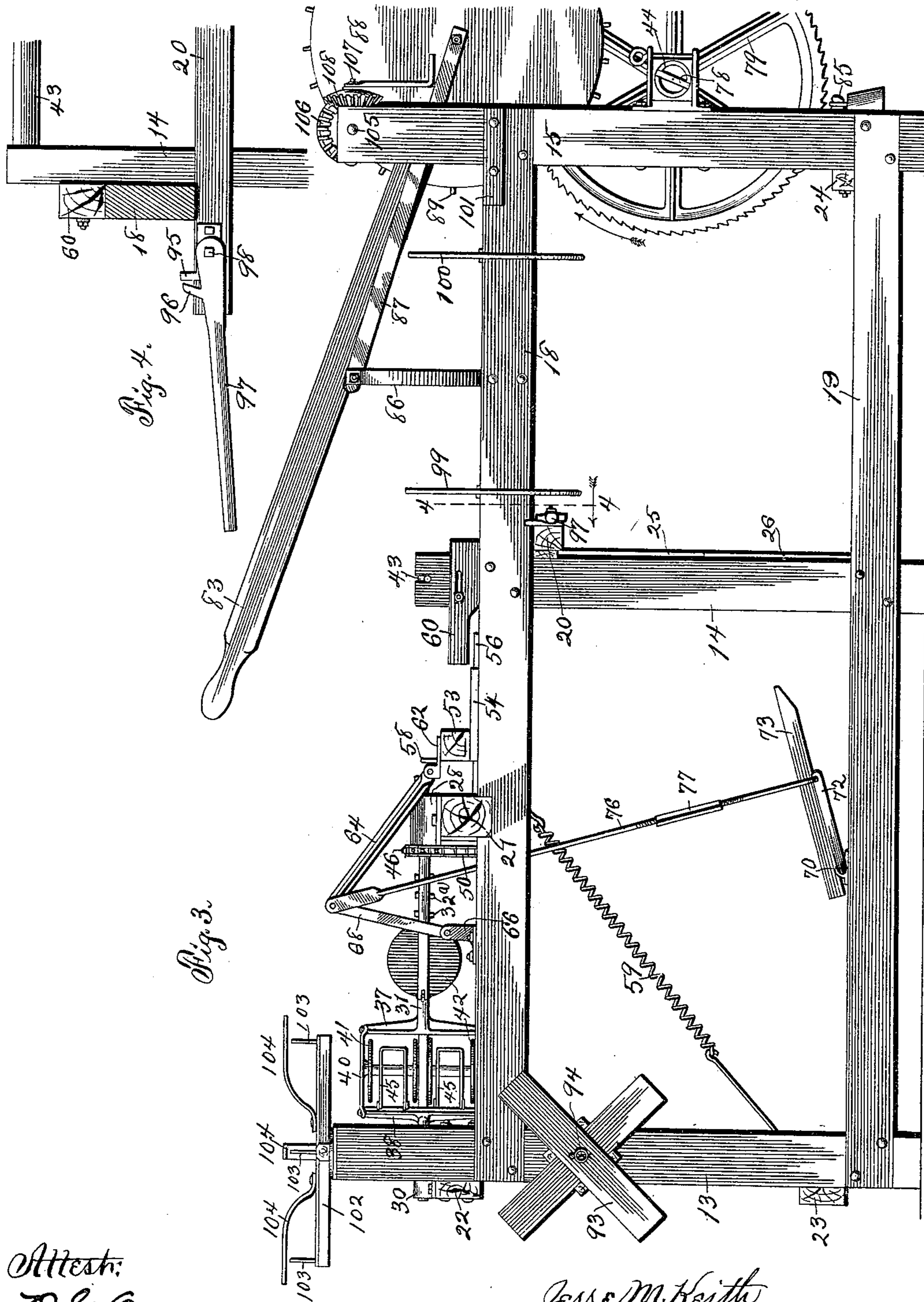
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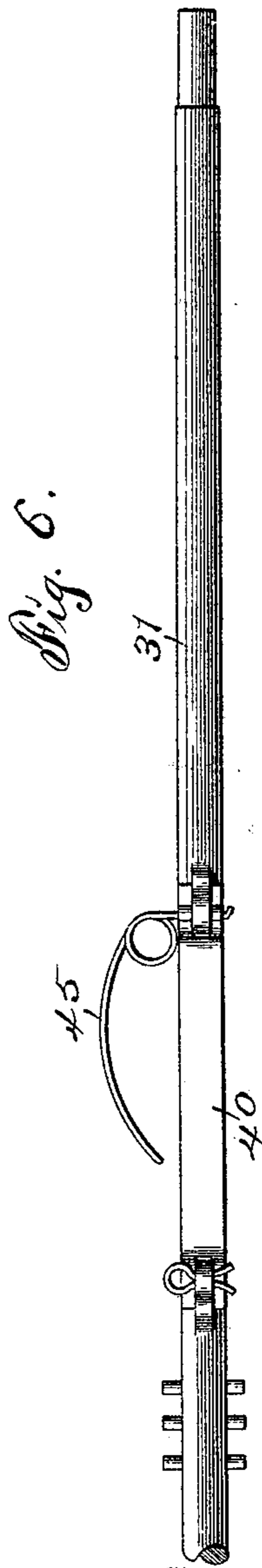
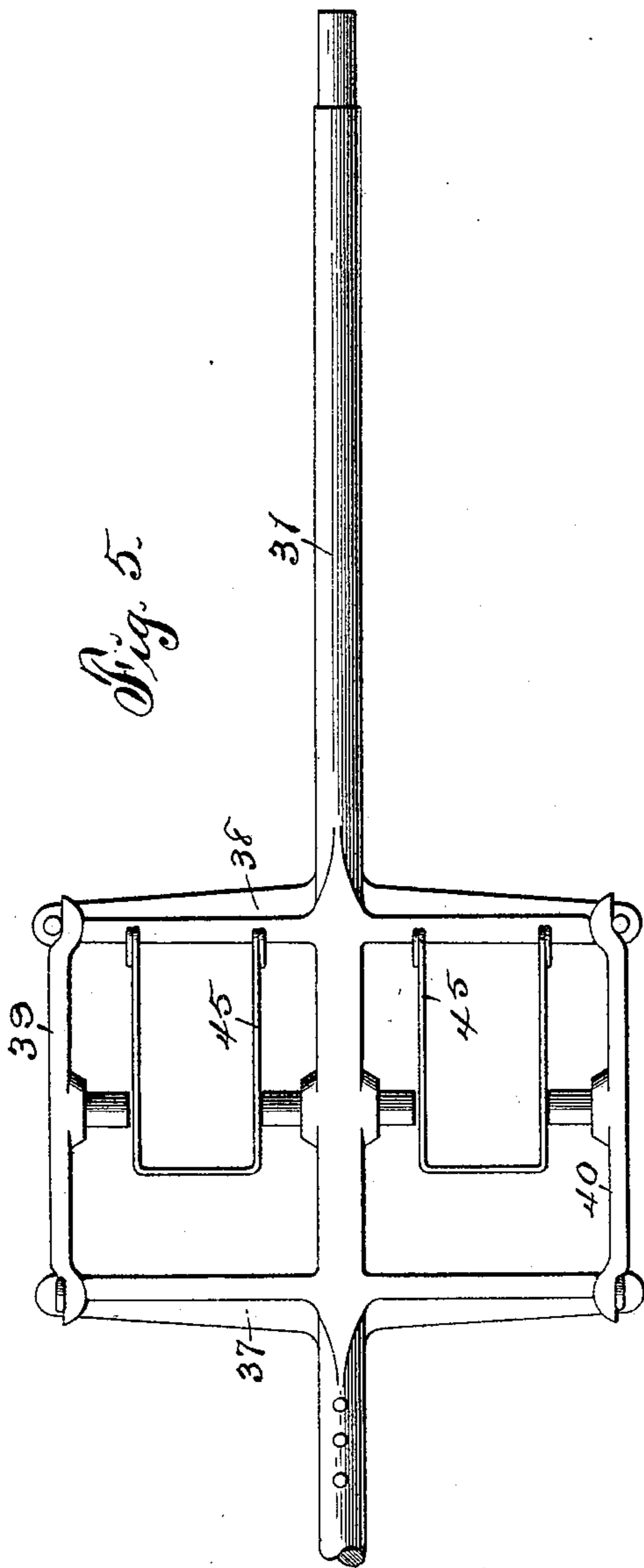
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4 Sheets—Sheet 4.



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UNITED STATES PATENT OFFICE.

JESSE M. KEITH, OF MURRAY, IOWA.

FENCE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 619,758, dated February 21, 1899.

Application filed October 18, 1897. Serial No. 655,573. (No model.)

To all whom it may concern:

Be it known that I, JESSE M. KEITH, a citizen of the United States of America, and a resident of Murray, in the county of Clark and State of Iowa, have invented a new and useful Fence-Machine, of which the following is a specification.

The object of this invention is to provide mechanism for weaving, constructing, or making the fences illustrated and described in United States Letters Patent granted to me on the 20th day of April, 1897, and numbered 580,869, and my application for Letters Patent of the United States pending concurrently herewith, Serial No. 646,852, filed August 2, 1897.

My invention consists in the construction, arrangement, and combination of elements hereinafter set forth, pointed out in my claims, and illustrated by the accompanying drawings, in which—

Figure 1 is a side elevation of the machine, portions of the reels being broken away. Fig. 2 is a plan of the machine shown in Fig. 1. Fig. 3 is an elevation of the machine on the side thereof opposite to the view shown in Fig. 1. Fig. 4 is a detail elevation, partly in section on the indicated line 4 4 of Fig. 3, illustrating a knife employed in my machine. Figs. 5 and 6 are detail views of one of the winding or twisting shafts.

In the construction of the machine as shown the numerals 10 11 12 and 13 14 15 designate supporting-posts on opposite sides of the machine, connected in sets by beams 16 17 and 18 19, respectively. The sets of posts or side frames are connected by cross-bars 20, 21, 22, 23, and 24 and by crossed braces 25 26 to form a secure and rigid machine-frame. The cross-bar 21 is formed with a longitudinal slot 27 vertically therethrough, and a series of journal-bearings 28, corresponding in number with the number of strands of the fence to be made on the machine, are mounted on the upper face of said cross-bar and secured thereto by bolts 29, traversing the bearings and the slot 27. By means of the slotted formation of the cross-bar 21 I am enabled to adjust the bearings 28 to different distances of separation by loosening the nuts of the bolts 29 and moving the bearings longitudinally of the cross-bar to or from each other. A series

of journal-bearings 30 are mounted upon the upper face of the cross-bar 22 in registration or alinement with the journal-bearings 29 and are bolted to said cross-bar rigidly.

Winding-shafts 31, 32, 33, and 34 are mounted in the journal-bearings 30 at their rear ends and have hubs or barrels formed on their forward ends and journaled in the bearings 28, which hubs or barrels are provided with tubes 35 36 on opposite sides of their axes and parallel therewith to receive and spread pairs of strand-wires. Yoke-arms 37 38 are formed on and extend transversely of each of the twisting or winding shafts and are connected at their outer ends by cap-plates 39 40. The cap-plates 39 40 are bifurcated at either end and engage at one end under lugs on the yoke-arms and at the other end are secured by pins to the opposite yoke-arm in a common manner. Spools 41 42 are mounted for rotation on pins journaled in the centers of the cap-plates 39 40 and seats in alinement therewith in the twisting-shafts, and said spools carry the wires which, twisted together, form the strands of the fence in single or individual form, and it is intended in the operation of the machine that the wires on said spools shall be extended through the tubes 35 36, over a roller 43, journaled in the posts 11 14, and to points of securance to and upon a reel 44, journaled in bearings fixed to the posts 10 15. Tension devices 45, formed of one-piece spring-frames, are fixed to the yoke-arms 38 and impinge against the coil of wire on the spools 41 42. Sprocket-wheels 46, 47, 48, and 49 are mounted rigidly on the twisting-shafts and are connected by a sprocket-chain 50 to a sprocket-wheel 51 on a crank-shaft 52, journaled in a bearing fixed to the front end of the cross-bar 21, the lower portion of the sprocket-chain being approximately horizontal, while the upper portion of said chain runs over the wheel 46, under the wheel 47, over the wheel 48, under the wheel 49, and over the wheel 51, and is thereby caused to drive the twisting-shafts two in one direction and two in the opposite direction and insures the engagement of the chain with the sprocket-wheels. A packing-bar 53 is positioned transversely of the beams 16 18 of the machine-frame and is supported at its ends on tracks 54 55, slidingly mounted on tracks 56 57 on said beams. The

packing-bar is provided with a plurality of angle-rods or teeth 58, extended to the right thereof and upwardly therefrom. The packing-bar normally is held in close relation to and parallel with the cross-bar 21 by means of a retractile coil-spring 59, fixed thereto and to the cross-bar 23, and is limited in its movement away from the cross-bar 21 by stops 60 61, adjustably mounted upon and adjustable transversely of the upper end portions of the posts 11 14. Ear-plates 62 63 are fixed to and project to the right of and above the end portions of the packing-bar 53, and levers 64 65 are pivoted at their forward ends to said ear-plates. Ear-plates 66 67 are fixed to and extend inwardly and upwardly from the beams 16 18 at the rear of the cross-bar 21, and levers 68 69 are connected at their rear ends pivotally to said ear-plates. The forward ends of the levers 68 69 are pivoted to the rear ends of the levers 64 65.

A rock-shaft 70 is journaled in bearings fixed to the beams 17 19 of the machine-frame and extends transversely thereof. A plate 71 is fixed to one end of the rock-shaft 70, and a crank-arm 72 is fixed to the opposite end of said shaft. A pedal 73 is bolted rigidly to the plate 71 and is connected by a rod 74 to the pin forming the pivot between the levers 65 and 69, which rod is provided with a turnbuckle 75, whereby it may be adjusted. The crank-arm 72 is connected by a rod 76 to the pin forming the pivotal connection between the levers 64 and 68, which rod is provided with a turnbuckle 77, whereby its length may be adjusted.

In the practical use of the mechanism thus far described the wires on the spools 41 42 are extended through the tubes 35 36 and secured to the reel 44. A picket made of two wires twisted together with barbs thereon, as described in my patent and application above mentioned, is placed between the wires and in a plane parallel with the cross-bar 21 and packing-bar 53. The crank 52 is rotated and revolves the twisting-shafts through the medium of the sprocket-wheels and sprocket-chain, thus twisting the wires together to form a strand. The strand-wires are then fed longitudinally the desired distance and another picket inserted between the wires forming the strand. The pedal 73 is depressed and forces the packing-bar 53 forwardly. The teeth 58 on the packing-bar engage the picket and drive it rigidly into engagement with the twisted portions of the strand-wires, and the twisting-shafts are again rotated and caused to twist the strand-wires at the rear of the picket. It is to be understood that the twisting of the strand-wires is continued and continuous between the pickets. Upon the release of the pedal 73 the packing-bar 53 is drawn rearwardly by the retractile spring 59, and the pedal 73 is elevated, as are the meeting end portions of the levers 64 65 68 69. During the uncoiling of

the wires from the spools 41 42 the tension-frames 45 engage the wires with a constantly-decreasing tension and restrict and limit the accidental unreeling thereof.

The reel 44 is formed of a pair of semi-annular bars mounted over a key that tapers from end to end, which key is shown in the elevations and marked 78. A ratchet-wheel 79 is mounted rigidly yet removably on the front end portion of the reel 44. A bearing 80 is fixed to the upper end of the post 10 and has a stub axle or bolt 81 thereon. A bell-crank lever 82 is fulcrumed on the stub axle or bolt 81, and a hand-lever 83 is fixed to the upper arm of the bell-crank lever and extends nearly to the crank 52. A pawl 84 is pivoted on the lower arm of the bell-crank lever 82 and engages the teeth of the ratchet-wheel 79. A weighted pawl 85 is fulcrumed on the lower portion of the post 10 and engages the teeth of the ratchet-wheel 79. By moving the lever 83 downwardly the bell-crank lever 82 is oscillated and the pawl 84 engages the ratchet-wheel 79 and rotates said ratchet-wheel, by this means winding the fence as it is completed upon the reel 44, the pawl or detent 85 preventing a reverse movement of the ratchet-wheel, and consequently a reverse movement of the reel 44 and fence.

An arched bar 86 is fixed to the beams 16 and 18 and extends transversely of and above the machine-frame. A yoke 87, bifurcated at its forward end, is pivoted at its rear end to the center of the arch-bar 86, and a measuring-wheel 88 is fulcrumed in the extremity of the bifurcated portion of said yoke. The measuring-wheel 88 has its periphery subdivided into equal parts and pins 89, mounted in and projecting radially therefrom and determining the subdivisions thereof. A toothed wheel or dial 90 is journaled on a pin 91 in the bifurcated portion of the yoke 87, and a pin 92, mounted in the measuring-wheel 88 and projecting from one side thereof, engages the toothed wheel 90 in each revolution of the measuring-wheel. The toothed wheel 90 should be provided with indices or numerals on each tooth indicating the serial number thereof in order that, the distance of separation of the pins 89 being known and the circumference of the measuring-wheel 88 being determined, it can be ascertained by a glance at the dial-wheel 90 what number of feet or rods of fence has been wound upon the reel 44, since the periphery of the measuring-wheel rides upon the roll of wire on the reel and the pins 89 thereon successively engage the fencing and revolve the wheel uniformly.

I have provided a picket-forming mechanism which comprises a wire-reel 93, mounted on a stub-axle 94 in the post 13, (see Fig. 3,) which reel contains barbed fence-wire of such size as I may desire to use in making the pickets. A knife-blade 95 is fixed to a projecting end portion of the cross-bar 20, and a knife-blade 96, in opposition to the knife-

blade 95, is fixed to a hand-lever 97, fulcrumed on a pin 98, traversing the bar 20. Supporting arms or racks 99 100 are mounted on the beam 18, and a stop 101 is mounted on the right end of the beam 18. The wire is unwound from the reel 93 and the end portion thereof carried within the arms or racks 99 100 and into engagement with the stop 101, and the bight of the wire is depressed between the knife-blades 95 96 and the hand-lever 97 elevated to approximate said knife-blades and sever a section from the wire, the severed section and each successive one of the desired number severed from the wire being deposited in the arms 99 100 and supported thereby until desired for use, at which time they are removed from the racks, carried around the machine, and deposited by weaving within the strand-wires, as heretofore described.

In order economically to supply the spools 41 42 with wire, I have provided a spooling mechanism, as follows: A reel 102, provided with pins 103, projecting upwardly therefrom, is mounted for rotation on the upper end of the post 13, and a bundle of smooth wire may be mounted on said reel and retained by said pins. Curved retaining-arms 104—four in number—are pivoted at their inner ends to the arms of the reel 102 and extend outwardly and upwardly over and above the pins 103 to still further retain a bundle of wire on the reel. It will be observed that the arms 104 may be turned inwardly across the center or axis of the reel, as shown in Fig. 2, to permit of the placing or removal of a bundle of wire relative to the reel-arm. A spool-shaft 105 is mounted in the post 15 and one or the other of the spools may be mounted thereon. A bevel-gear 106 is mounted on the spool-shaft 105 and when rotated revolves the spool. A crank-shaft 107 is mounted in the post 15 at right angles to the spool-shaft 105, and a bevel-gear 108 thereon meshes with the bevel-gear 106 and rotates it. The crank-shaft 107 is rotated manually. Now when it is desired to spool the wire on the reel 102 the end portion of said wire is fixed to a spool on the shaft 105 and said shaft rotated by means of the crank-shaft 107 and intermeshing bevel-gears, thus winding the wire upon the spool.

I claim as my invention—

1. A fence-loom comprising a supporting-frame, a twisting mechanism on said frame, tracks on said frame at the discharge end of the twisting mechanism, a packing mechanism mounted to slide laterally on said tracks and provided with teeth to engage successive pickets, toggle-jointed levers connecting the packing mechanism and frame, a pedal pivoted on the frame, a rod connecting the pedal to one of the toggle-jointed levers whereby said lever may be expanded to move the packing mechanism, stops limiting the movement of the packing mechanism by the levers, a spring connecting the bar and frame and ar-

ranged to move the bar in opposition to the levers, a reel to receive the completed fence and a measuring device carried on the frame and engaging the completed fence on the reel. 70

2. In a fence-machine, the combination of mechanism for reeling and mechanism for twisting the strand-wires, a packing-bar 53 provided with teeth for engaging a picket, tracks supporting said packing-bar for movement longitudinally of the path of travel of the strand-wires, levers 64 and 65 pivoted to said packing-bar, levers 68 and 69 fulcrumed to the machine-frame, a rock-shaft, a pedal on said rock-shaft connected to a pin whereby the levers 65 and 69 are connected, a crank on the rock-shaft connected to the pin whereby the levers 64 and 68 are connected, and a spring connecting the packing-bar and the machine-frame, the tension of the spring being exerted in the opposite direction to force applied to the pedal. 80 85

3. In a fence-machine, a plurality of twisting-shafts journaled at their rear ends, barrels or hubs on the forward ends of said twisting-shafts, bearings supporting said barrels or hubs for rotation, pairs of tubes in the barrels or hubs, yoke-arms on the twisting-shafts, spools on the yoke-arms, tension-frames on the yoke-arms and extended across the axes of the spools to engage the wire thereon, and sprocket wheel and chain mechanism whereby the twisting-shafts are rotated in unison. 90 95

4. In a fence-loom the supporting-frame, the twisting-shafts journaled on said frame and each constructed with yoke-arms or cross-heads cast thereon, extending in opposite directions therefrom and spaced apart, studs on the shafts midway between and in alignment with the yoke-arms, keepers connecting the extremities of the yoke-arms and provided with central studs mating the studs on the shafts, the studs being shaped and arranged to carry spools of wire, tension-frames on the yoke-arms at the rear of the studs and extending across the axes of the spools on the studs to frictionally engage the wire thereon, means for driving said twisting-shafts, a packing-bar provided with teeth to engage successive pickets and mounted for lateral reciprocation longitudinally of the frame, a reel for winding the completed fence and a measuring device mounted on the frame and engaging the completed fence on the reel. 100 105 110 115 120

5. In a fence-machine, a supporting-frame, twisting devices on said frame, a reel on said frame arranged to receive the completed fence from the twisting devices, a yoke 86 fixed at its ends to the upper side bars of the frame between the twisting devices and the reel, the central portion of the yoke being arched above the horizontal plane of the bars supporting the same, ears on and extending upwardly from the central portion of said yoke, a yoke 87 pivoted at its rear end on said ears and forked at its forward end, and a measuring 125 130

device mounted in the forked end of said yoke 87 and engaging the completed fence on the reel.

6. In a fence-machine, twisting-shafts 5 mounted for rotation, cross-heads on said shafts, keepers connecting the extremities of the cross-heads, spools mounted for revolution on the shafts and keepers, and tension devices mounted on the rear cross-heads and 10 engaging the wire on the spools, each of which tension devices is formed of a single length of wire with a straight central portion, curved side portions and stems connected with the side portions by coils, the stems being seated 15 in the cross-head.

7. In a fence-machine, a supporting-frame, a packing-bar slidably mounted on said frame for lateral reciprocation, yielding pressure devices for moving said bar in one di- 20 rection, a foot-lever or pedal for moving said bar in the opposite direction, and stops adjustably mounted on the frame to limit the movement of the bar by the pedal.

8. In an apparatus for making fence, the 25 combination of a supporting-frame, a spool-shaft laterally projecting from said frame, trays laterally projecting from the frame in line with the spool-shaft, a stop 101 fixed to the frame beyond the trays from the spool-shaft and a knife fixed to the frame between 30 the trays and spool-shaft.

9. In a fence-machine, a supporting-frame, a twisting mechanism on said frame, tracks on said frame at the discharge end of the 35 twisting mechanism, a packing-bar mounted to slide laterally on said tracks, which bar is

provided with teeth to engage successive pick-ets, toggle-jointed levers connecting the bar and frame, a pedal pivoted on the frame, a rod connecting the pedal to one of the toggle- 40 jointed levers whereby said lever may be expanded to move the bar, stops limiting the movement of the bar by the levers, and a spring connecting the bar and frame and arranged to move the bar in opposition to the 45 levers.

10. In a fence-machine, tubes for receiving and spreading pairs of strand-wires, in combination with a packing-bar having teeth to engage a picket, tracks supporting said pack- 50 ing-bar for sliding movement, and lever mechanism pedally-operated in one direction and spring-operated in the other direction to move said packing-bar.

11. In a fence-machine, twisting-shafts pro- 55 vided with yoke-arms or cross-heads cast thereon, extending in opposite directions therefrom and spaced apart, studs on the shafts midway between and in alinement with the yoke-arms, keepers connecting the ex- 60 tremities of the yoke-arms and provided with central studs mating the studs on the shafts, the studs being shaped and arranged to carry spools of wire, and tension-frames on part of the yoke-arms and extending across the axes 65 of the spools on the studs to frictionally engage the wire thereon.

JESSE M. KEITH.

Witnesses:

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