No. 611,944. Patented Oct. 4, 1898.

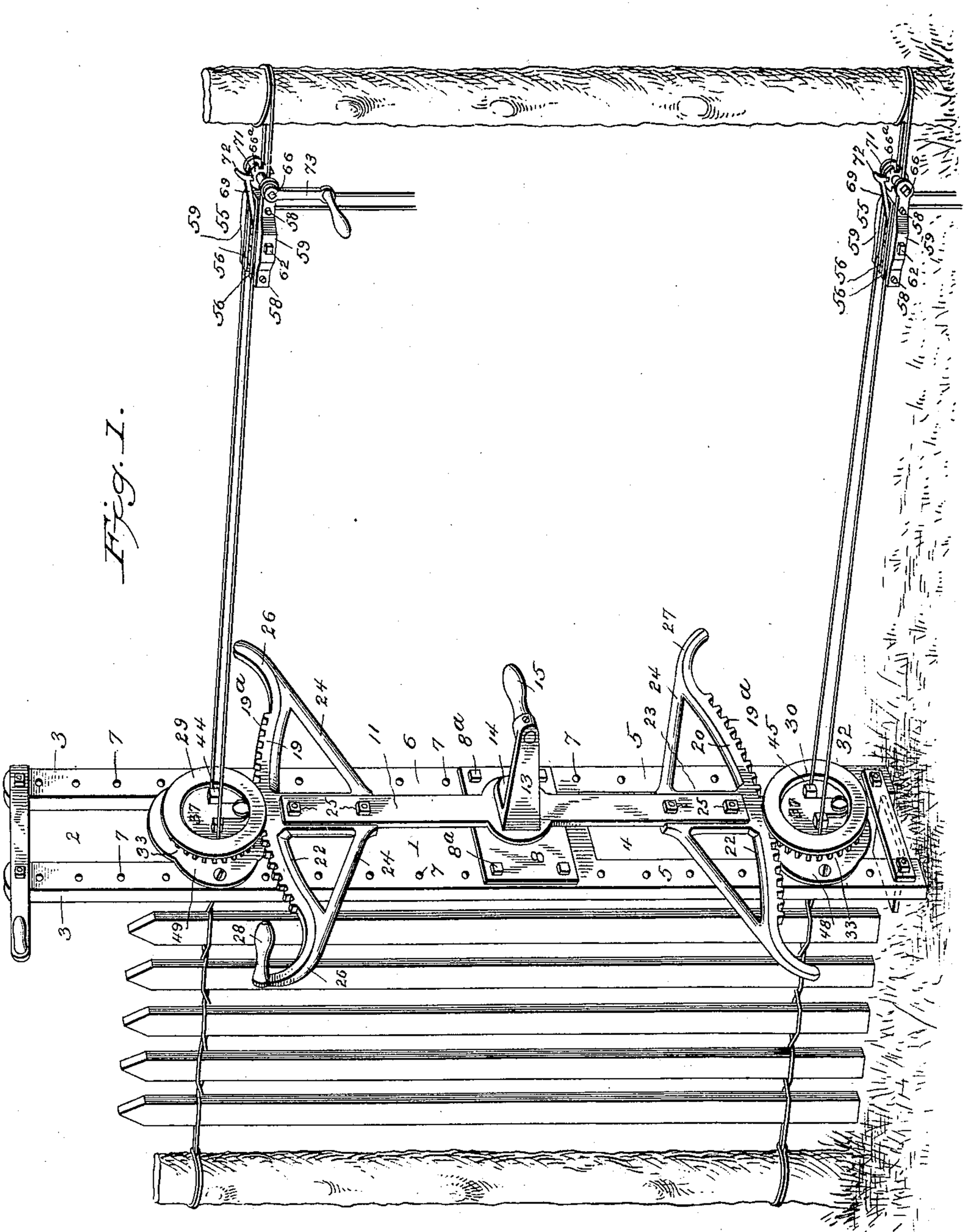
W. F. SEARGEANT.

SLAT AND WIRE FENCE MACHINE.

(Application filed Mar. 15, 1898.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.



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(No Model.) 3 Sheets—Sheet 2.

Fig. 2.

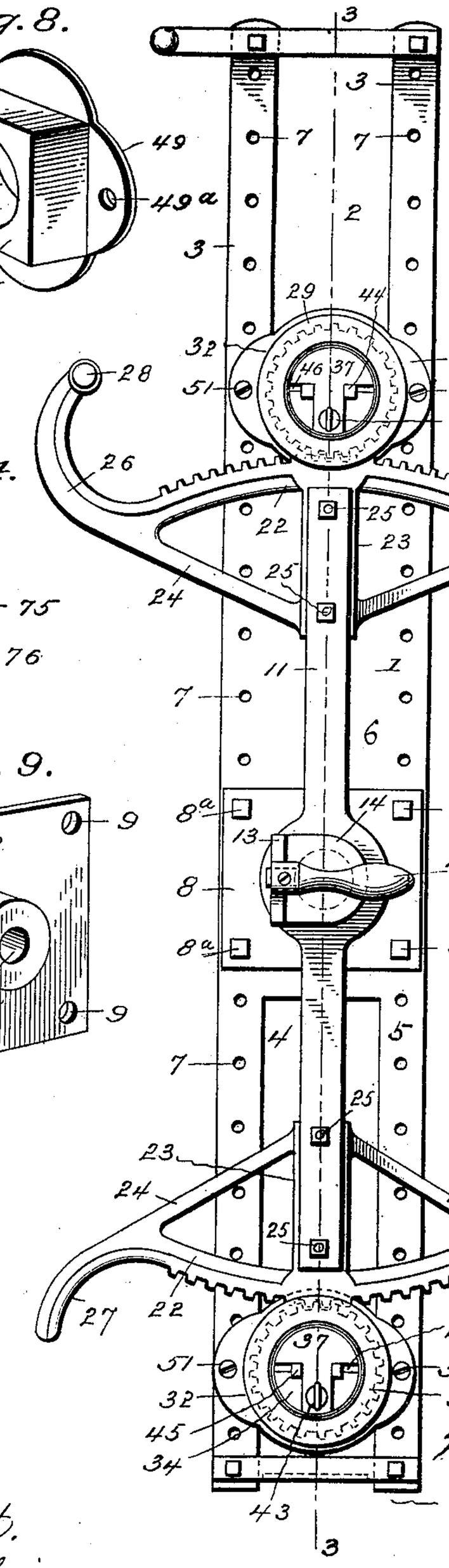


Fig. 8.

Fig. 4.

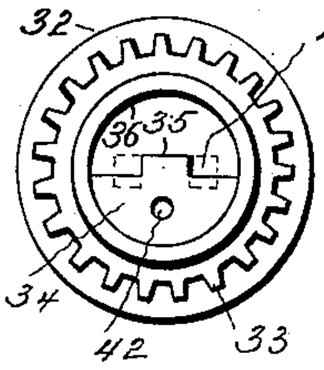


Fig. 5.

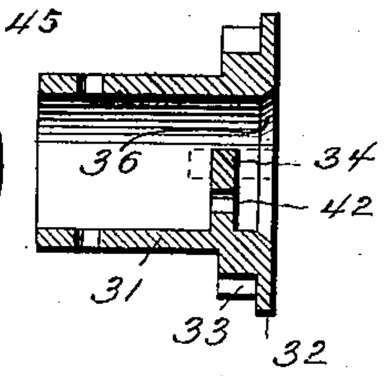


Fig. 14.

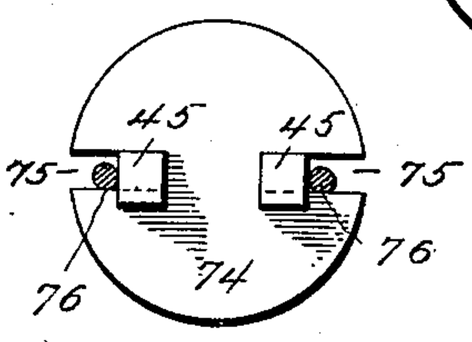


Fig. 6.

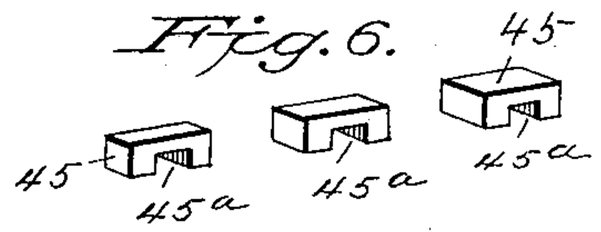


Fig. 9.

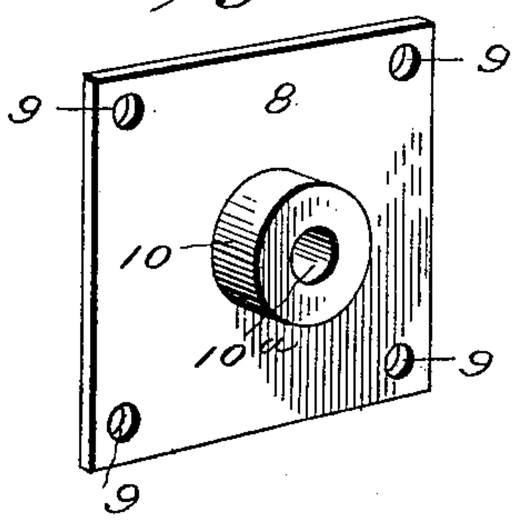
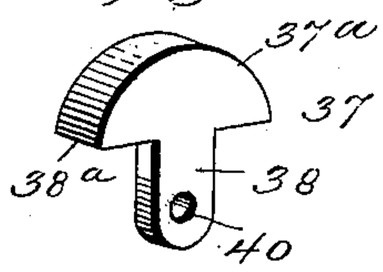


Fig. 7.



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SLAT AND WIRE FENCE MACHINE.

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(No Model.) 3 Sheets—Sheet 3.

Fig. 10.

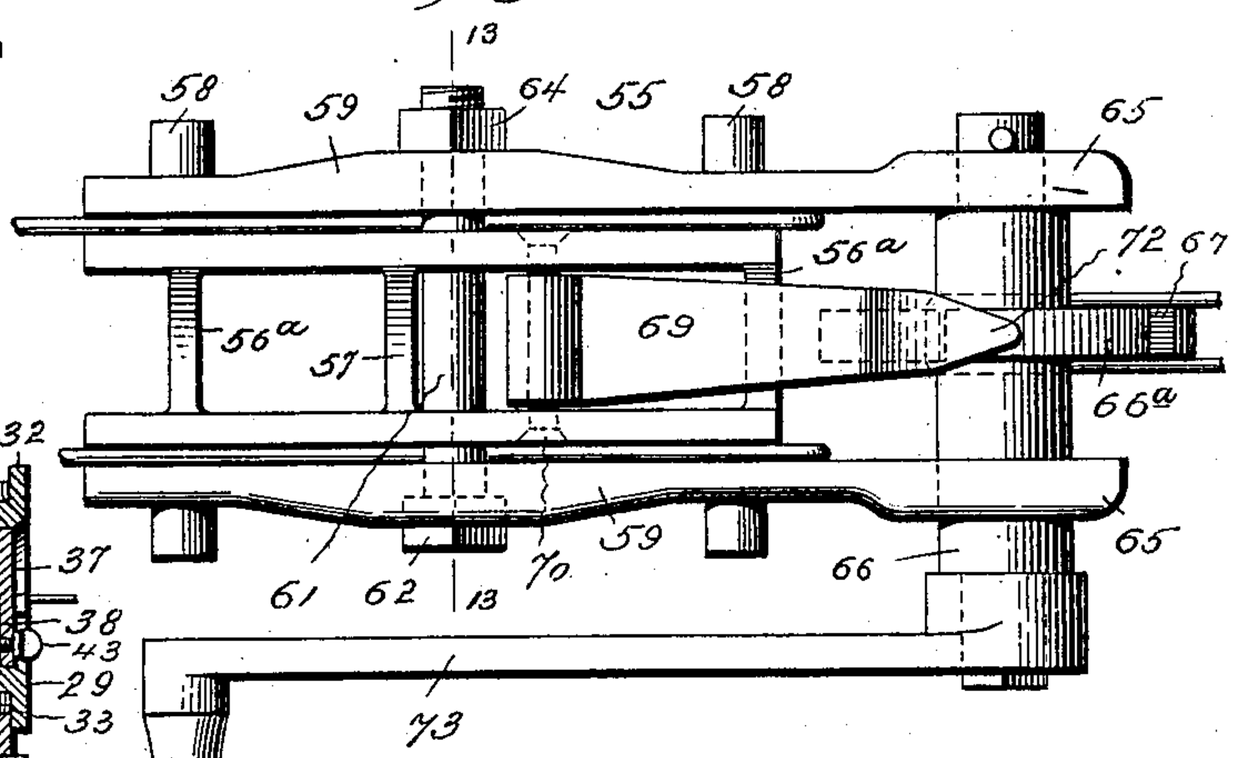


Fig. 3.

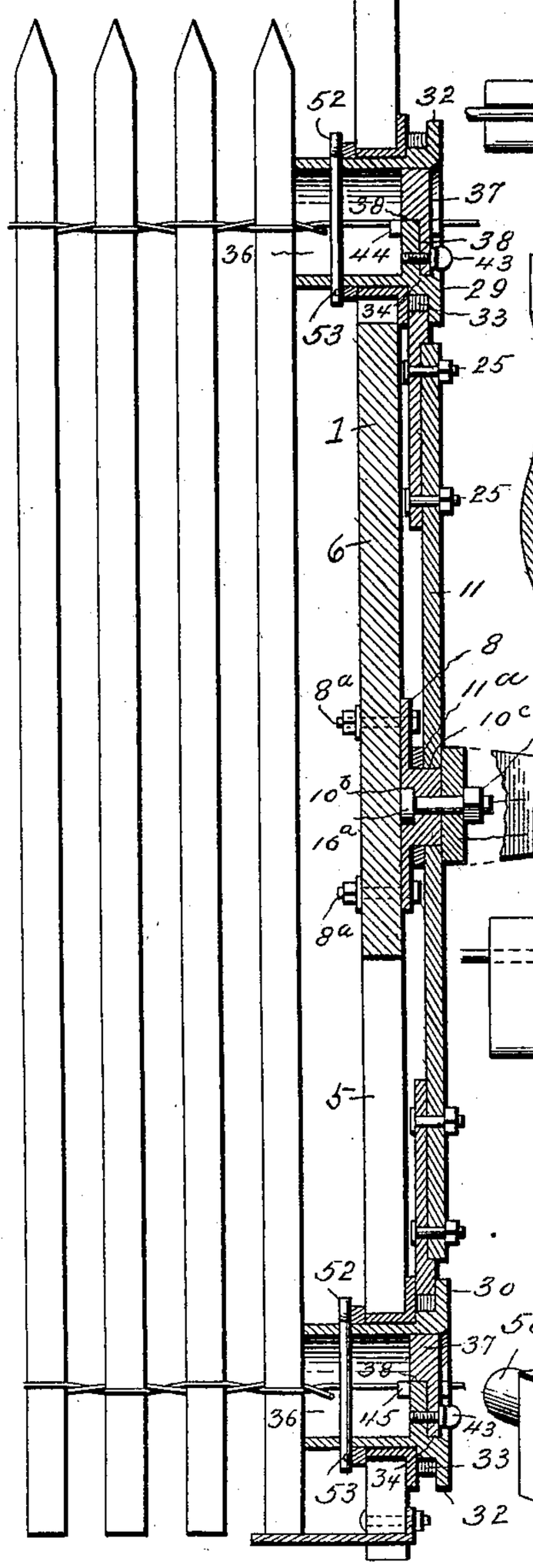


Fig. 13.

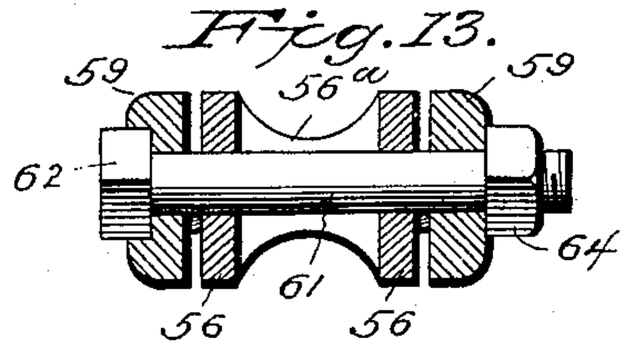


Fig. 11.

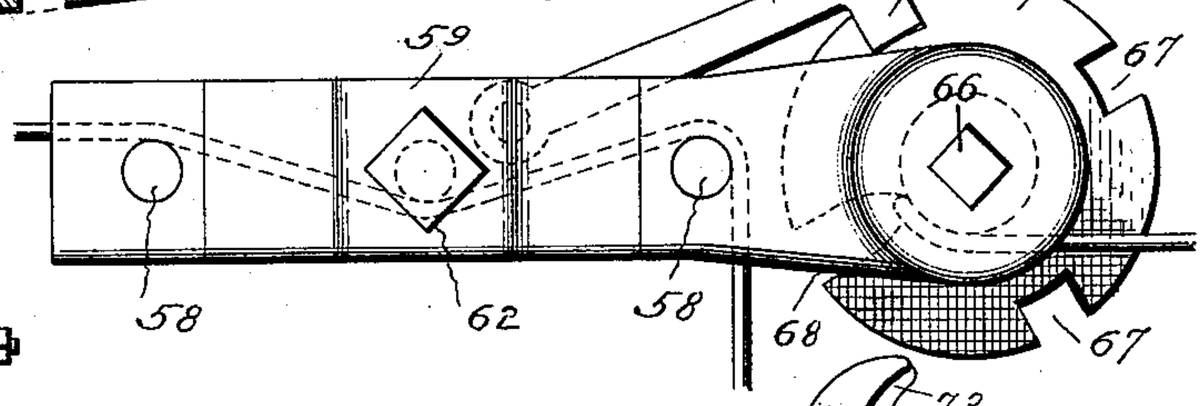
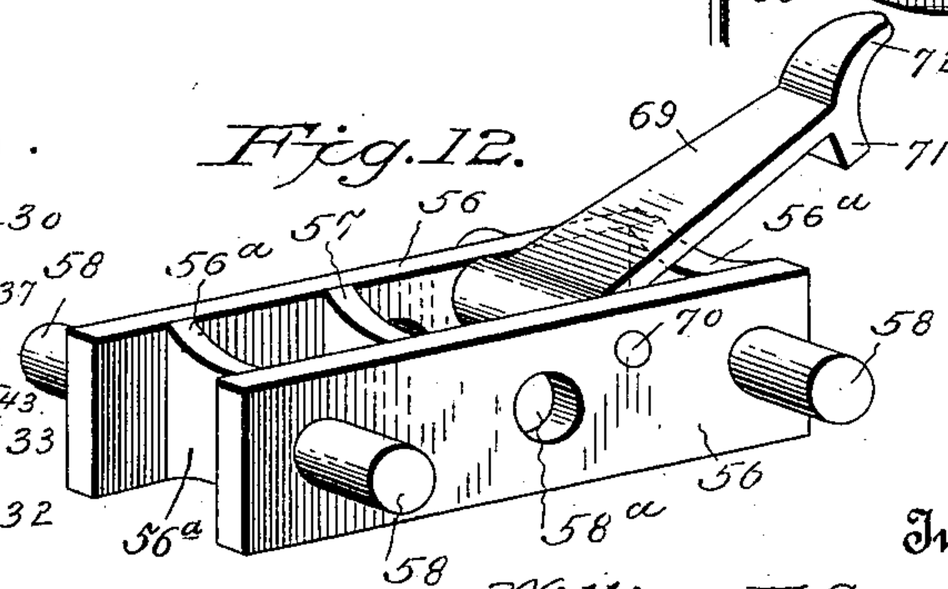


Fig. 12.



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UNITED STATES PATENT OFFICE.

WILLIAM F. SEARGEANT, OF MARSHALL, MISSOURI.

SLAT-AND-WIRE-FENCE MACHINE.

SPECIFICATION forming part of Letters Patent No. 611,944, dated October 4, 1898.

Application filed March 15, 1898. Serial No. 673,987. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. SEARGEANT, a citizen of the United States, residing at Marshall, in the county of Saline and State of Missouri, have invented certain new and useful Improvements in Fence-Machines, of which the following is a specification.

This invention relates to improvements in the fence-machine shown and described in my application, Serial No. 645,848, filed July 24, 1897, wherein wire cables are twisted around pickets for the purpose of securing them firmly at intervals in an upright position in the construction of what are known as "picket-fences."

The objects of the present invention are to provide improved means whereby to render the machine capable of being moved or drawn readily along the wire strands which are adapted to form the twisted cables; to provide an improved construction of the twister-heads whereby to adapt said twister-heads for operation in connection with pickets of different sizes and in a manner to vary the size of the twist or mesh according to the size of the pickets it is desired to employ; to provide for the ready passage of the twister-heads over splices in the wires; to simplify the various parts with a view to holding them securely in place on the frame while permitting the desired adjustment of the elements, and to reduce to a minimum the tendency of the parts to become injured or broken in the practical service of the machine.

A further object of the invention is to provide an improved tension mechanism by which the wires forming the cables may be held taut and under the desired longitudinal strain while the twisting of said wires around the pickets is being effected by the twisting mechanism.

With these ends in view my invention consists in the novel construction and arrangement of parts, which will be hereinafter fully described and claimed.

To enable others to understand my invention, I have illustrated the preferred embodiment thereof in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a perspective view of a wire-twisting machine constructed in accordance with my invention as it appears in practical service in the field. Fig. 2 is a front elevation of the twisting mechanism. Fig. 3 is a vertical longitudinal sectional view on the plane indicated by the dotted line 3 3 of Fig. 2, but showing the twisting mechanism in operative relation to the wires to be twisted and the pickets, which, in connection with the wires, form a wire-bound picket-fence. Fig. 4 is a front view of one of the twister-heads. Fig. 5 is a vertical longitudinal sectional view through the twister-head, illustrated by Fig. 4. Fig. 6 is a detail perspective view of a series of different-sized jaws adapted for use interchangeably in the twister-head of my machine. Fig. 7 is a detail perspective view of a removable segment-shaped plug adapted to be secured in the twister-head for the purpose of holding the jaws in place therein. Fig. 8 is a detail perspective view of the journal-block for one of the twister-heads. Fig. 9 is a detail perspective view of the adjustable fulcrum-plate for the operating-lever. Fig. 10 is an enlarged plan view of the tension device. Fig. 11 is a side elevation of the tension device illustrated by Fig. 10. Fig. 12 is a detail perspective view of the inside frame and the pawl hinged to said frame, forming parts of the tension device. Fig. 13 is a cross-sectional view through the tension device on the plane indicated by the dotted line 13 13 of Fig. 10, and Fig. 14 is a detail view showing the jaws illustrated in Fig. 6 applied to another form of twister-head.

Like numerals of reference denote like and corresponding parts in each of the several figures of the drawings.

The reference-numeral 1 indicates the main upright, which carries all the working parts of the twisting mechanism and which is of a length suitable to adapt the machine for working with pickets which vary in height. This upright is slotted or bifurcated for a suitable distance at its upper end, as at 2, to provide a pair of upper parallel arms 3, and in like manner the lower part of the upright 1 is slotted or bifurcated for a corresponding distance, as at 4, to provide another pair of parallel arms 5, that part of the upright between the slots 2 and 4 being left solid, as at 6. Said upright is provided along its arms and the solid central part 6 thereof with two se-

ries of apertures 7, which provide for the adjustable attachment of certain parts to be hereinafter described.

The numeral 8 designates the fulcrum-plate for the operating-lever 11, which fulcrum-plate is substantially flat, as shown by Fig. 9, and is adapted to be applied to the solid central part 6 of the upright 1 in a manner to bear firmly thereon. At or near its corners said fulcrum-plate is provided with the apertures 9, which are adapted to register or coincide with certain of the apertures 7 in the upright 1, whereby the fastening-bolts 8^a may pass through the coincident apertures for the purpose of holding the fulcrum-plate firmly and rigidly on the upright. It is evident that the bolts 8^a may be removed to permit the fulcrum-plate to be raised or lowered on the upright when the twister-heads are correspondingly raised or lowered to twist the wires at the desired height on the pickets, said adjustment of the fulcrum-plate being coincident with and not independent of that of the twister-heads, as will be understood. The fulcrum-plate is provided with an integral central boss 10, of cylindrical form, which projects beyond the front face of said plate 8, and through this boss is formed a passage or opening 10^a, the inner end of which is enlarged on the rear face of the plate to provide the recess 10^b, adapted to receive the head 16^a of a fastening-bolt 16, as will presently appear. The operating-lever 11 is provided at its center with an aperture 10^c of a diameter and form to journal snugly on the cylindrical boss 10 of the fulcrum-plate 8, whereby said lever has a solid support on the fulcrum-plate and is adapted to swing freely back and forth in a plane parallel to that of the upright 1.

One of the improvements which I have made in the present invention is the provision of a carrying-arm 13, by which the machine may be readily moved along the wires which form the cables of the picket-fence. This carrying-arm is applied to the operating-lever 11 in such manner that it assists in holding said operating-lever on the stud or boss 10 of the fulcrum-plate 8. The carrying-arm 13 is provided at its inner end with an integral apertured flange or foot 14, which lies at right angles to the length of said arm 13, and to the outer end of the arm 13 is suitably attached a handle 15, which can be grasped by the operator when it is desired to move the machine lengthwise along the wires of the fence. The flange or foot 14 is fitted against the vertical exposed face of the boss 10, which lies flush with the surface of the lever 11, and through the aperture in said flange 14 and the passage 10^a of the boss 10 passes the securing-bolt 16, the head 16^a of which is fitted in the recess 10^b of the fulcrum-plate, so as to lie flush with the rear face of said plate 8, it being necessary to fit the bolt in the fulcrum-plate previous to the attachment of the latter to the upright 1. The bolt-head is preferably angular to fit snugly in the recess of the plate 8 and be held thereby against turning, and the threaded extremity of the bolt passes through the flange 14 of the arm 13, so as to receive the clamping-nut 17. The flange 14 is clamped firmly or solidly against the exposed face of the boss 10 and overlaps said boss and the aperture 10^c, so that it serves to confine the lever 11 on the boss of the fulcrum-plate, but in such manner as not to prevent its movement. By loosening the nut 17 the carrying-arm 13 may be shifted to different angular positions in relation to the upright 1 to suit the convenience of the operator. Between the fulcrum-plate and the operating-lever 11 is interposed a washer or disk 11^a, which serves to space the operating-lever away from the vertical face of the upright 1, so that the operating-lever may rock or turn freely on the boss without striking against the bolts that fasten the fulcrum-plate on the upright. (See Fig. 3.) The operating-lever 11 carries the segments 19 20, by which the twisters are given the axial turning movement necessary to twist the parallel strands of wire around the pickets of the fence. Said segments are arranged to lie in planes substantially at right angles to the length of the lever, as represented by Fig. 2. Each segment is provided on one edge with a plurality of gear-teeth 19^a, and the rear side of such segment is reinforced by an integral rib 22, the faces of which are curved to converge and meet at a central line at the back edge of the segment.

In the preferred embodiment of my invention I make the segments 19 20 separate from the operating-lever 11, and to provide for securing these parts together each segment is provided with a tang 23, which is formed with a recess or socket to receive the respective ends of the lever. Through said tang and lever are passed bolts 25, which serve to secure the segments firmly and solidly to the operating-lever. The tangs 23 are cast or made as an integral part of the segments and are braced by the employment of the braces 24, preferably of oval form in cross-section and joined at their extremities to the tang and the segment, as shown clearly by Fig. 2. It will thus be seen that the segment, its tang, and the braces provide a solid casting having the necessary strength to withstand the rough usage when the machine is in practical service in the field, and the braces between the tang and segment are further important because they tend to strengthen the segment against breakage due to the shock or impact of the stops for the segment striking against the twister-head. The ends of each segment are extended beyond the convexed toothed edge and are curved reversely to form the stop-arms 26 27, which are adapted to strike or impinge against the twister-heads and limit the swinging movement of the lever in either direction, and one arm 26 of the upper segment 19 is further prolonged or extended to

receive an operating-handle 28, adapted to be grasped by the operator for the purpose of swinging the lever on its fulcrum to rock the segments 19 and 20, and thereby operate the twister-heads simultaneously.

The numerals 29 30 indicate, respectively, the upper and lower twister-heads, which are arranged to engage with the segments 19 and 20, respectively. The parts constituting each twister being identical a description of one will suffice, which I will now give, referring particularly to Figs. 4, 5, 6, 7, and 8 of the drawings. Each twister-head comprises a tubular or cylindrical portion 31, which affords a journal therefor and which is provided at its outer end with an annular flange 32, and on the cylindrical or tubular portion, within the flange thereof, is secured a pinion 33, which when the twister-head is journaled in the journal-block 48 on the upright 1, as presently described, is adapted to mesh or engage with the toothed operating-segment of the lever 11. The tubular portion of the twister-head is provided on its interior, adjacent to and within the vertical plane of the externally-arranged pinion 33, with a web 34, which is an integral part of the twister-head and is situated in the opening or passage provided in said twister-head, as shown by Figs. 4 and 5. The web 34 does not extend entirely across the passage or opening in the tubular twister-head, but terminates substantially on the diametrical line of the tubular head, thus forming an opening 36 between the free edge of the web and the arc-shaped surface of the tubular head. This web 34 is further provided with a central tongue 35, which projects upward and beyond the diametrical line of the twister-head, and the edges of the web on opposite sides of the tongue provide seats adapted to receive the jaws 44 45, presently referred to. The space 36 between the free edge of the web and the arc-shaped surface of the tubular head is designed to be closed normally by a segment-shaped plug 37, the curvature of the body 37^a of which conforms to the arched form of the tubular head, and which plug is of a size proper to fit in the opening 36 of said twister-head. The plug 37 is removably secured in place in the twister-head, in which it is arranged so as to clamp or hold the jaws 44 45 firmly in position on the web 34, and to effect the firm union of this plug 37 with the web of the twister-head I provide said plug with a depending tongue 38, said tongue being provided with an aperture 40, adapted to coincide or aline with a threaded hole or aperture 42, provided in the web 34, whereby a fastening-screw 43 may be passed through the hole 40 and screwed into the aperture 42 to firmly and detachably secure the tongue 38 to the web of the twister-head. The thickness or depth of the body portion 37^a of plug 37 is greater than that of the tongue 38, its outer face being flush with that of said tongue, and on either side and beyond said tongue is afforded a relatively broad flat bearing-surface. (Indicated by 38^a.) When the plug is secured in the twister-head, a portion of the bearing-surface 38^a will extend over the upper edge of the tongue 35, and that portion of the bearing-surface 38^a at the sides of the tongue 38 will bear upon the upper surface of the jaws 44 45, as is plainly shown in Figs. 2 and 3. The jaws 44 45 are arranged within the twister-head in the direction of the length thereof and on opposite sides or edges of the central tongue 35 of the web 34, and each jaw is provided at a central point and on one side with a recess which forms a seat 45^a, that is adapted to snugly embrace the upper edge of the web 34 in the twister-head. The jaws 44 45 do not fill the spaces between the sides of the tubular twister-head and the central tongue 35 of the web 34; but said jaws are so arranged in the said twister-head as to leave openings 46, through which the wires or strands may pass, thus constructing the twister-head for the passage therethrough of the wires that are to be twisted together to form the cable and secure the pickets in place.

In the practical use of machines of this character it is frequently desirable to space the wires at a greater or less distace apart to accommodate pickets of different sizes. In order, therefore, to provide for adjusting the wires to different widths, I contemplate the employment of jaws of different sizes or widths, substantially as represented by Fig. 6, said jaws being interchangeable one with the other and each being constructed with the seat 45^a to enable the same to be used on the web 34 and in connection with the segment-shaped plug 37 of the twister-head.

Each twister-head is journaled in a journal-block 48, which is secured in one slotted end of the upright 1. To firmly secure the journal-block in position on the upright, I construct the body portion 48^a thereof of square form and provide it with a radial flange 49, preferably of the form shown by Fig. 8 and having the apertures 49^a. Each journal-block has a circular opening 50, in which the tubular or cylindrical portion 31 of the twister-head is adapted to be journaled in place, and the rear end of said tubular or cylindrical portion protrudes beyond the angular body of said journal-block to receive the detent-pins 52, which are passed through openings in said tubular portion, one end of each fastener-pin 52 having a key 53, as shown by Fig. 3. The square portion 48^a of the journal-block 48 is fitted snugly in the slot between the parallel arms of the upright 1, and in adjusting the journal-block in position on the upright the flange 49 thereof is arranged to bear against the front side of said upright, so that the apertures 49^a in said flange coincide with certain of the apertures 7 in the upright and provide for the passage of the securing-bolts 51. The journal-block is thus fitted and secured to the upright to

be held securely and firmly in place thereon, and it is also capable of a vertical adjustment on the upright. The twister-head is journaled in the journal-block to rotate freely therein under the motion of the operating-lever, which is transmitted by the toothed segment and the gear to said twister-head.

In moving the machine along the wires, should a splice in either or both wires be reached, which would ordinarily offer a serious obstruction to the further progress of the machine, it is only necessary to remove the plug 37 and the jaws clamped thereby in the twister-head, when a sufficiently-large opening will be afforded to permit the passage therethrough of the splice in the wire, after which the jaws and plug may be replaced.

In Fig. 14 I have shown the application of a pair of jaws 45 to a twister-head 74 of the kind employing peripheral slots, such as 75, the position of the wires being indicated in section at 76. In this form of twister-head the tension of the wires is sufficient to keep the jaws in place, as will be apparent.

In connection with my improved machine I employ a tension device 55, which is illustrated in its operative relation to the twisting mechanism by Fig. 1 and shown in detail by Figs. 10 to 13, inclusive. This tension device consists of an inside frame 56, having its side bars joined together by suitable end bars 56^a and braced at a point intermediate of their length by the cross-bar 57, as clearly shown by Fig. 12. Said inside frame 56 is further provided at its ends with the studs 58, which project outwardly from the sides of said frame 56, and in its side members with apertures 58^a. The wires which it is desired to hold under tension are arranged to pass between the sides of the inside frame 56 and the outside clamping-plates 59, which are arranged in close lateral relation to said frame 56, and the outside clamping-plates 59 are apertured, as shown by Fig. 11, to enable them to be fitted loosely on the studs 58 of said frame 56, thus giving to the outside clamping-plates 59 a limited lateral movement with respect to the sides of the frame 56. The clamping-plates 59 are drawn together to hold the wires between themselves and the frame 56 by means of a nut 64 on the screw-threaded end of a bolt 61, which passes through suitable openings formed in the clamping-plates 59 and the apertures 58^a in the sides of the frame 56. The squared head 62 of this bolt seats in a squared recess in one of the clamping-plates, whereby turning of the bolt in clamping the wires is prevented.

It will be observed from the foregoing description that the improved tension device serves to space the wires at the desired distance apart and to securely and firmly clamp the ends of the wires between the frame 56 and the clamping-plate 59, said frame 56 being braced centrally against the tension exerted by the bolt 61 by means of cross-bar 57. The ends of the clamping-plates 59 are extended beyond one end of the frame 56, and said extended ends of the plates are enlarged to form bearings 65 for a transverse shaft 66, which is journaled in said plates substantially at right angles to the length of the frame 56. The shaft 66 is provided with a disk 66^a, in which is formed a series of radial notches 67 and a deeper notch 68, said notch 68 extending well in toward the axial line of the shaft 66. This deep notch 68 is adapted to receive the looped end of the double wire by which the tension device may be connected to one of the fence-posts, as shown by Fig. 1, and the strain or pull of the looped wire and the fence wires or cables is resisted by the employment of a locking-pawl 69, which is carried by the frame 56 and engages with the disk 66^a on the shaft. This pawl 69 is hinged at one end on a rivet 70, which is fastened to the frame 56, as indicated by the dotted lines in Fig. 10, and at its free end the pawl has a locking-lip 71 and the extended lifting-piece 72. The lip 71 of the pawl is adapted to fit in either notch 67 of the disk 66^a, and the piece 72 furnishes a convenient grasp for the fingers when it is desired to lift the pawl out of engagement with the notched disk. One end of the shaft 66 is squared to receive a suitable crank 73.

In the operation of the machine the wires are threaded through the twister-heads, and one end of said wires is attached to the fence-post, while the other ends thereof are confined in the tension device, as shown by Figs. 10 and 11, said tension device being connected by the looped wire to another fence-post situated at a suitable distance from the post to which the wires are directly attached. The fence-wires having been properly strained or put under tension by the rotation of crank 73 and the locking-pawl having been placed in engagement with the notched disk of the shaft 66, the machine is in condition for operation. The machine is moved along the stretched wires to the proper distance adjacent to one of the posts, and a picket having been inserted between the wires the operating-lever is swung to one side, thus causing its toothed segments to give rotary motion to the twister-heads and effecting the twisting of the wires into a cable at one side of the line of the picket. Another picket is now inserted in the space between the wires and the operation is repeated, the machine being moved lengthwise along the fence after the insertion of the picket and twisting of the wire.

The twister-heads may be readily adapted for use in connection with pickets of different sizes by the employment of the interchangeable jaws 45 of a size proper to form the necessary space between the wires.

The carrying-arm 13 provides a convenient means by which the operator may move the machine lengthwise along the wires, and, as aforesaid, the handle of this carrying-arm may

be adjusted in a position convenient to the operator in moving the machine.

I may also employ in this machine the handle at the top of the upright and the plate at the bottom thereof for the pickets to rest upon; but as these parts are described and claimed in my application before mentioned I have not further referred to them herein.

I am aware that changes in the form and proportion of parts and in the details of construction may be made without departing from the spirit or sacrificing the advantages of my invention, and I therefore contemplate herein such mechanical changes or modifications as clearly fall within the scope of my invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a fence-machine, the combination with an upright and twister-heads journaled thereon, of a fulcrum-plate rigidly clamped to said upright, a lever journaled on said fulcrum-plate and carrying means for engagement with the twister-heads to operate the latter, and a carrying-handle clamped to the fulcrum-plate to hold the operating-lever against displacement thereon and for moving the machine lengthwise along the wires, substantially as described.

2. In a fence-machine, the combination with an upright, and twister-heads carried thereby, of a fulcrum-plate clamped to said upright and provided with a hollow boss, an operating-lever journaled on said boss and having means for engaging with the twister-heads to rotate the latter, a carrying-arm fitted against the boss to confine the operating-lever in place thereon, and a bolt having a head seated in said boss, and a nut bearing on said carrying-arm whereby to hold the latter rigidly in place on the fulcrum-plate, substantially as described.

3. In a fence-machine, the combination with a twister-head, of interchangeable spacing-jaws adapted to be removably mounted therein, substantially as described.

4. In a fence-machine, the combination with a twister-head, of interchangeable jaws adapted to be mounted therein for spacing the wires, and means for clamping said jaws removably in place in said twister-head, substantially as described.

5. In a fence-machine, a tubular twister-head provided with an interior web, spacing-jaws mounted on said web within the twister-head and arranged to form wire-passages therein, and means for clamping said jaws removably in place in the twister-head, substantially as described.

6. In a fence-machine, a tubular twister-head provided with a transverse web, spacing-jaws seated removably on said web and within the twister-head, and a plug detachably secured to the web within the twister-head and engaging with said jaws to hold them rigidly in place, substantially as described.

7. In a fence-machine, a tubular twister-head provided with a transverse web arranged therein to form an opening, a segment-shaped plug removably fitted in said opening of the twister-head, jaws seated on the web to form wire-openings through the twister-head and clamped in place removably therein by said plug, and a clamping-screw engaging with said plug and the web of the twister-head, substantially as described.

8. In a fence-machine, a tubular twister-head provided on its interior with a transverse web having a central tongue, removable spacing-jaws fitted upon said web upon opposite sides of the tongue thereof and arranged to form wire-passages in the twister-head, a clamping-plug fitted in the head upon the web and engaging the removable jaws, and a clamping-screw engaging said web and plug to hold the latter and the jaws removably in place, substantially as described.

9. In a fence-machine, the combination with an upright, slotted to form parallel arms, of an angular journal-block fitted in said upright between its arms and provided with an offstanding flange secured removably to the arms of the upright, a twister-head journaled in said journal-block and protruding from the rear side thereof, a pin passing through the twister-head to hold the same from endwise displacement in the journal-block, and a keeper for securing said pin in place, substantially as described.

10. In a fence-machine, an operating-lever, segment-gears provided with recessed tangs and having braces joining the segments and tangs, and bolts adapted to secure the opposite ends of said lever firmly in the recesses of said tangs, substantially as described.

11. In a fence-machine, a tension device consisting of clamping-plates, a shaft journaled in said plates, a disk on the shaft provided with radial notches and with a loop-receiving notch which is deeper than said radial notches, a frame within the clamping-plates and loosely connected thereto, a bolt for drawing the clamping-plates toward the sides of the frame, and a pawl pivoted in said frame and provided with a lip adapted to engage with the notched disk, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WILLIAM F. SEARGEANT.

Witnesses:
R. D. JOHNSTON, Jr.,
F. B. KEEFER.