

No. 649,598.

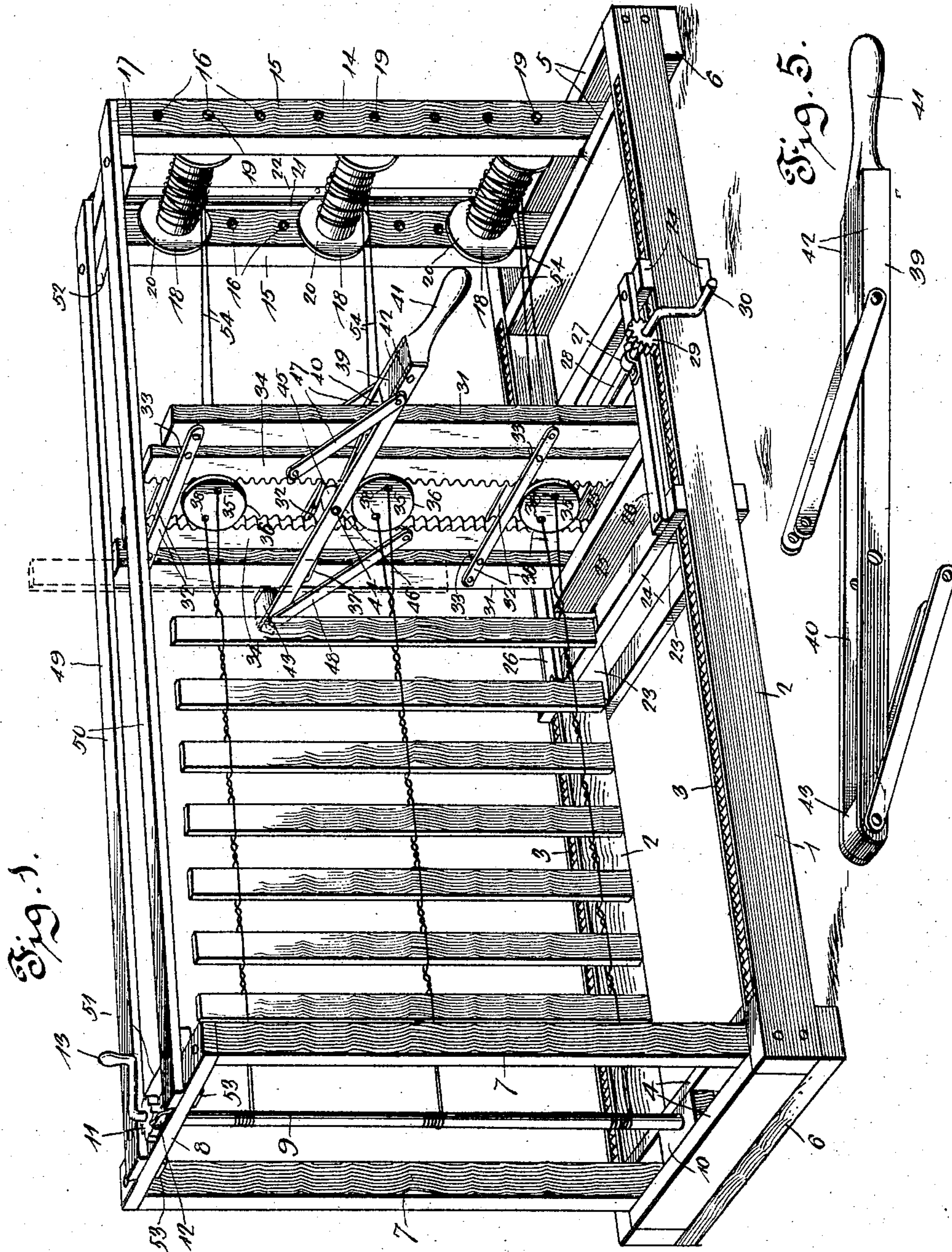
Patented May 15, 1900.

H. A. DE CHENNE.
FENCE MACHINE.

(Application filed Sept. 22, 1899.)

(No Model.)

2 Sheets—Sheet 1.



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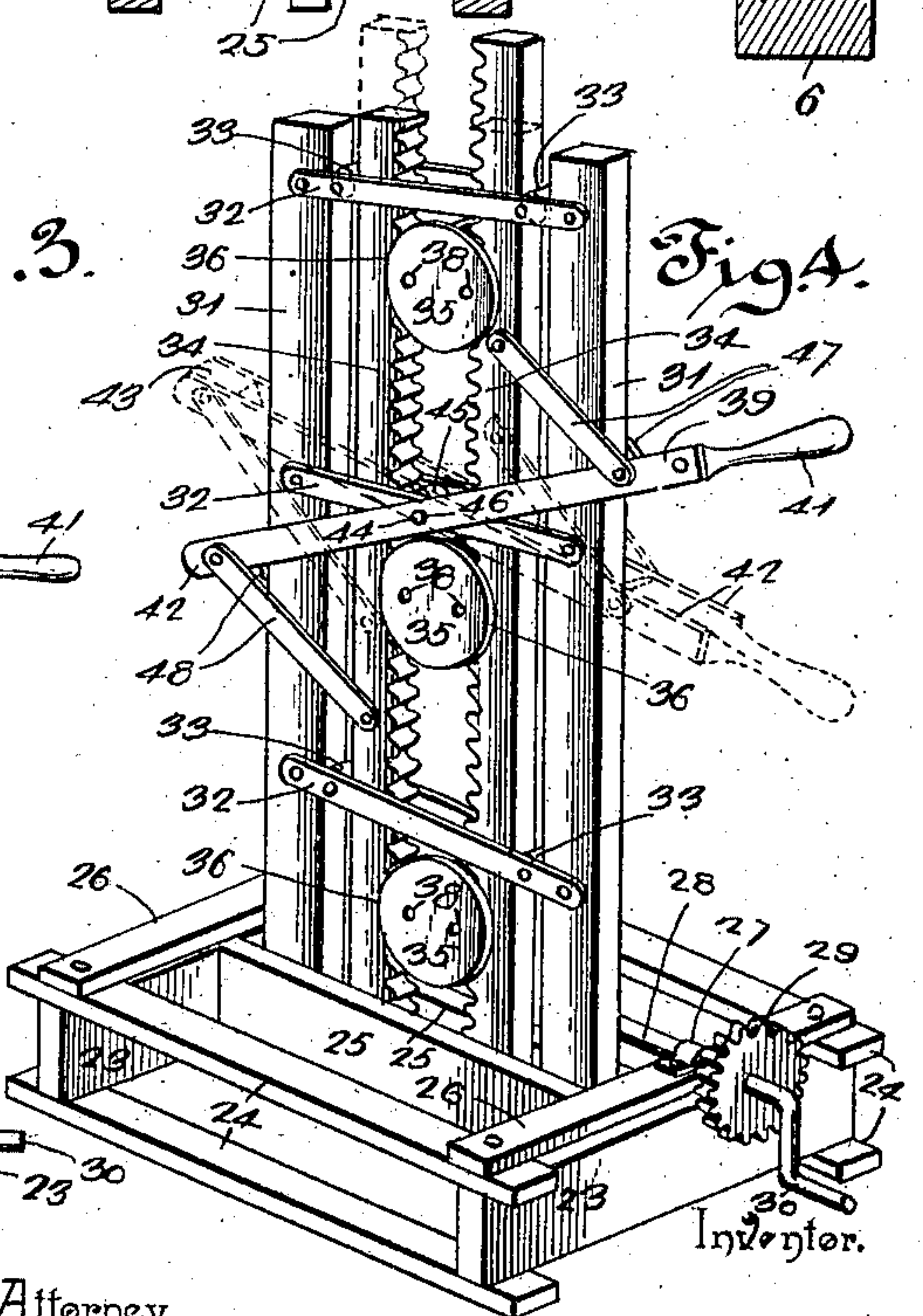
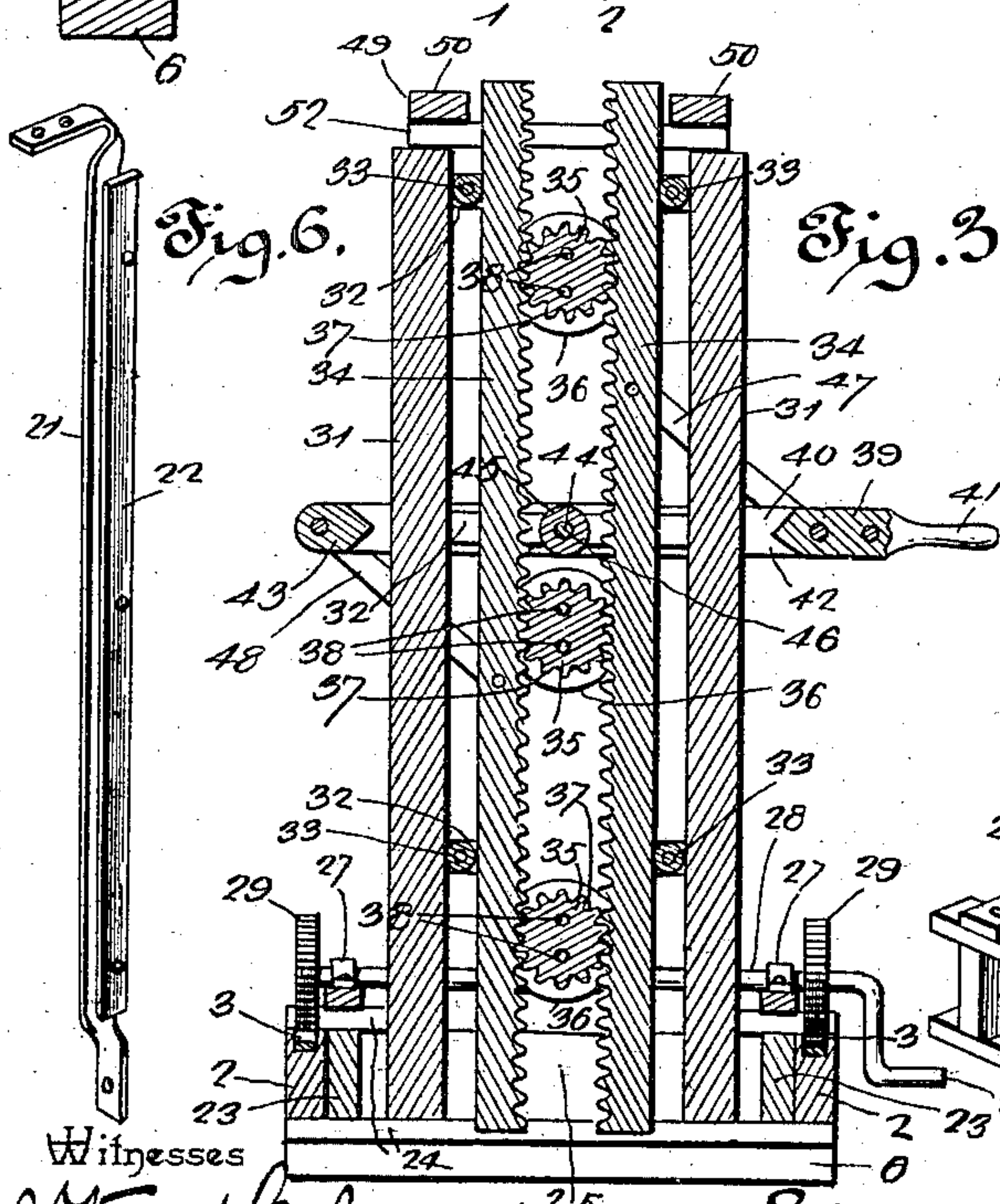
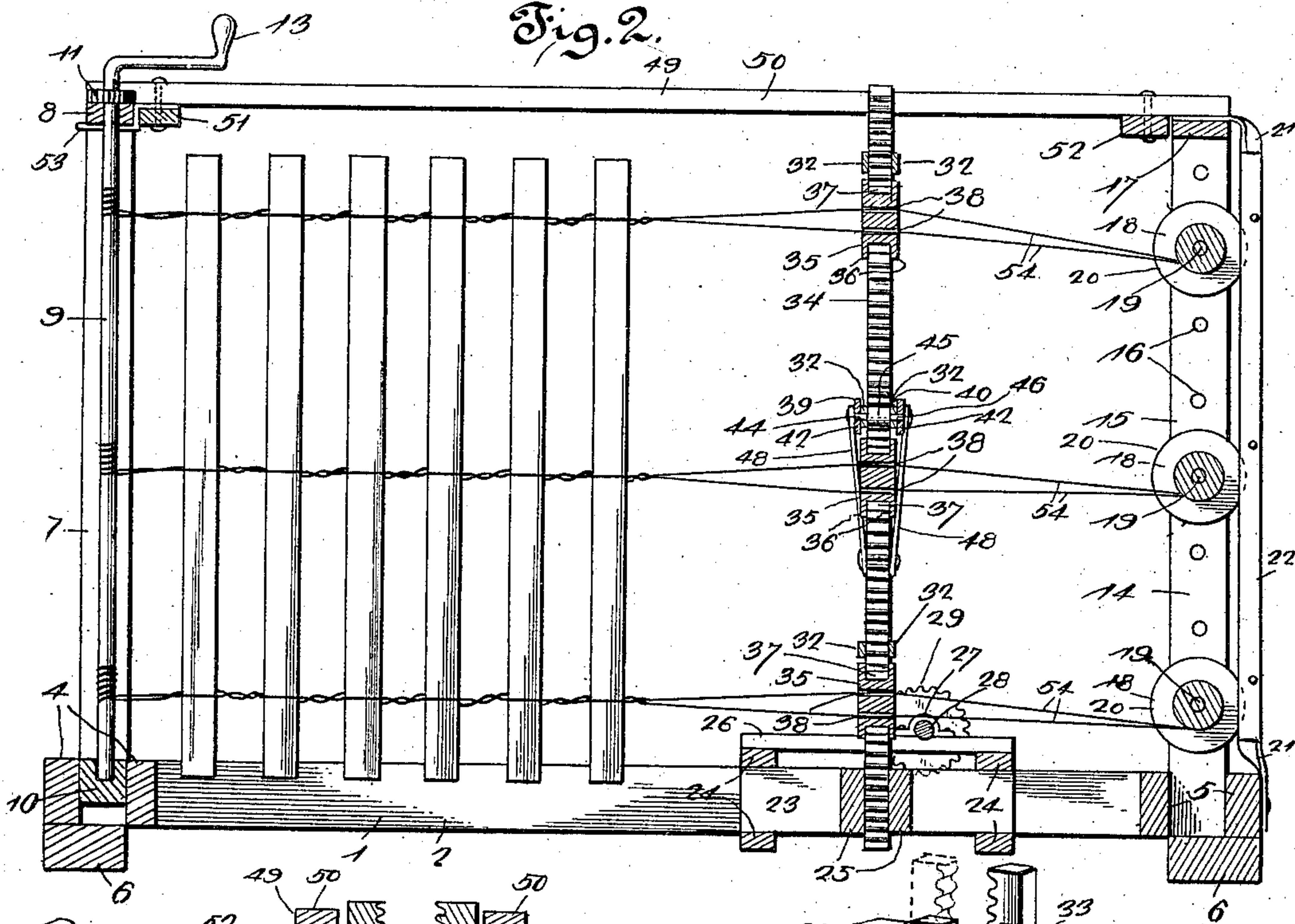
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UNITED STATES PATENT OFFICE.

HENRY A. DE CHENNE, OF SORENTO, ILLINOIS.

FENCE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 649,598, dated May 15, 1900.

Application filed September 22, 1899. Serial No. 731,329. (No model.)

To all whom it may concern:

Be it known that I, HENRY A. DE CHENNE, a citizen of the United States, residing at Sorrento, in the county of Bond and State of Illinois, have invented a new and useful Fence-Making Machine, of which the following is a specification.

This invention relates to fence-making machines or looms of the manually-operated species having mechanism for regularly twisting wire strands or runners around inserted pickets or slats and particularly intended in the present instance to produce continuous or extended fencing for after application and also equally well adapted for constructing panels of predetermined lengths to be subsequently secured in selected places.

The aim of the invention is to divest this class of machines as much as possible of all mechanical contrivances and superfluities and at the same time avoid the least detracting from their efficiency by such depletion, but on the contrary effectually increase their practicability and insure a more positive and advantageous fulfilment of the desired end, to afford means for acquiring convenience in operation and adjustment by adjacently positioning the respective mechanisms for these purposes, and thereby require but one operator to successfully control the entire device, to construct and arrange the twist-ers in such manner that they may be readily changed in position, depleted or supplemented by other similar parts to vary the elevation or number of strands or runners on the pickets or slats without involving a material separation or readjustment of bearing devices or supports and conjointly therewith effect a particular actuating leverage organization in operative relation to reciprocating devices for simultaneously and uniformly rotating the said twist-ers, and to supply such other incidental attachments to the minimized structure as are necessary and contributory to the materialization of a complete machine of the nature set forth.

Generally stated, the invention consists of a frame provided at one end with a number of adjustable reels on which are wound companion strands or runners to be fed through shiftable twist-ers freely and removably interposed without bearing-support between op-

posite reciprocating operating-bars embraced by a slotted lever having reversely-extending upper and lower connections movably attached thereto and respectively to upper and lower portions of the said opposite bars, a winding shaft or spindle being located at the other end of the frame to receive the completed fence fabric.

The invention also consists of the distinct arrangement of twist-ers between opposite operating-bars without axial support or other analogous bearing and free to be vertically adjusted by loosening the upper ends of said bars and employ therewith vertically-adjustable reels to permit a variation in the elevation of the strands or runners on the pickets and also accommodate an increase or decrease in the number of said parts.

The invention further consists of the arrangement of a series of twist-ers operated by opposite reciprocating bars combined with a slotted lever embracing the latter and having movably-attached connections on both sides of its fulcrum extending above and below the lever and respectively attached to the upper and lower portions of the said bars, whereby an alternate pull-and-push influence is exerted on the bars in accord with the elevation or depression of the lever.

The invention further consists of a tension device of a continuous non-differentiating character for the reels and having spaced edges contiguous to and engaging the rims of the said reels, thereby forming a continuous tension-resistance irrespective of the vertical elevation of the reels and conformable to any number of the latter without adjustment or other extraneous manipulation.

The invention furthermore consists of the details of construction and arrangement of parts hereinafter more fully described and claimed.

The preferred embodiment of the invention is illustrated in the accompanying drawings, but is subject to such variations in dimensions, proportions, and minor details of construction as fully lie within the purview of the invention or would not cause a sacrifice of any of the advantages of the same, and wherein—

Figure 1 is a perspective view of a fence-making machine including the features of the

invention. Fig. 2 is a longitudinal vertical section taken through the center of the machine. Fig. 3 is a transverse vertical section through the twisting-frame and adjacent parts of the main frame. Fig. 4 is a detail perspective view of the uprights, reciprocating bars, operating-lever, and twisters of the twisting-frame shown on a larger scale and parts in operating position in full and dotted lines. Fig. 5 is a detail perspective view of the operating-lever. Fig. 6 is a similar view of the tension device.

Referring to the drawings, wherein similar numerals are employed to indicate corresponding parts in the several views, the numeral 1 designates the main frame, consisting of longitudinal sills 2, having teeth 3 extending along the greater portion of their upper edges and connected at opposite ends by closely-arranged pairs of cross-ties 4 and 5, the sills and ties being held slightly elevated by base-rests 6. Between and by the ties 4 a winding-frame is supported, and consists of uprights 7, attached to each other at the top by a cap-piece 8, in which a vertically-disposed winding spindle or shaft 9 has bearing, and also in a lower block 10, located about centrally of the said ties 4. On the spindle or shaft 9, above and resting on the cap-piece 8 is a ratchet-wheel 11, adapted to be retentively engaged by a pawl 12, movably attached to the cap, and the upper end of the said spindle or shaft terminates in a crank-handle 13.

The ties 5 rigidly support a reel-frame 14, comprising opposite uprights 15, with aligned apertures 16 therein and connected at their upper ends by a cap-piece 17. In this frame a series of reels 18 are adjustably mounted by means of elongated removable bearing-rods 19, fitted in transversely-aligned apertures 16 in the opposite uprights 15 and also projected through said reels, the latter having end rims or flanges 20 for an evident purpose. The reels can be elevated or lowered or their number increased or decreased to change the location or vary the number of the strands or runners on pickets or slats of one length or accommodate different sizes and kinds of pickets. A metallic or other suitable strip 21 has its opposite ends secured to the cap 17 and outermost cross-tie 5, and thereto is fastened a second strip 22. These strips have their inner edges slightly spaced apart and in such position as to receive the rims or flanges 20 at one end of the reels and institute sufficient frictional pressure or tension thereon to prevent too loose movement or rotative play. This tension device extends in a vertical direction the full length of the reel-frame, and the reels when set in the desired position are simultaneously fitted to the strips without adjustment of any nature, thus allowing any number to be used within the maximum capacity of the frame, and if less than the maximum adapted to be disposed at will. When the reels are removed or reset, the ten-

sion device specified does not offer the least resistance to such operations, and a further advantage is derived by having the tension non-differentiating or uniform on all the reels.

A twisting-frame is adjustably positioned in the main frame and consists of opposite guides 23, closely arranged against the inner sides of the sills 2 and connected at the ends by upper and lower cross-strips 24, having their free terminals extended over above and below said sills. Intermediate of the guides 23 are fixed a pair of spaced cross-supports 25, and to the uppermost cross-strips 24, inside of the line of teeth 3 of each sill, are secured longitudinal ties 26, which have suitable journal-bearings 27 therein for rotatable reception of a transverse shaft 28. On the ends of this shaft toothed wheels 29 are keyed and mesh with the teeth 3 of the sills 2, and at one end a crank-handle or analogous device 30 is also attached to said shaft for imparting a rotative movement thereto. Rising from the supports 25 are uprights 31, united by upper, lower, and intermediate transverse brace-straps or similar devices 32, arranged in pairs and with said supports serve to maintain a regularity of space between the uprights. Between the upper and lower brace-straps 32, adjacent the uprights 31, antifrictional rollers 33 are placed, and thereagainst the outer edges of vertically-reciprocating rack-bars 34 have movable contact and are guided by the said brace-straps. The intermediate straps 32 have no antifrictional rollers between them to permit the rack-bars to be adjusted, as will be presently set forth. The inner edges of the rack-bars 34 are toothed and actuate or rotate interposed twisters 35, having opposite flanged ends 36 and intermediate circumferential teeth 37, all integrally formed, and each twister is provided with a pair of apertures 38, extending entirely there-through from end to end. The teeth of the twisters and rack-bars are in close mesh at all times when these parts are in operative relation and the twisters hold the rack-bars apart equally, the initial construction and arrangement of the uprights 31, brace-straps 32, and antifrictional rollers 33 being proportioned and determined in such manner as to insure their necessary contiguity and obviate a jam or any tendency to a detrimental binding.

An operating-lever 39 is employed to actuate the reciprocating rack-bars 34 and in its organization embodies a slot 40. This lever could be produced in a variety of structural ways, but the form shown is preferred. A handle 41 is located at one end and thereto are secured opposite bars or straps 42, embracing the uprights 31 and rack-bars 34 and united at the farther ends by a space-block 43. The slot 40 is thus provided between the end of the handle and space-block and is large enough to permit the lever to have full operative movement in a vertical direction. The fulcrum 44 of this lever is supported by the

intermediate brace-straps 32 and consists of an interposed block 45 between said straps which serves as a means for holding a fulcrum-pin 46, made fast to the bars or straps 42 of the lever. This fulcrum is centrally positioned between the rack-bars 34, so as to equalize the throw of the lever in opposite upper and lower directions, and it will be noticed that the said rack-bars also freely move between the bars or straps 42 on reverse sides of the fulcrum 44. The lever is connected to the rack-bars by reversely-extending pairs of links 47 and 48, the links 47 being projected upwardly, one on either side of the one upright 31 and movably attached to the rack-bar 34 nearest the handle 41. The other pair of links have a downward projection and likewise embrace the other upright 31 and are movably secured to the rack-bar a greater distance from the handle of the lever. The upstroke of the lever will push the rack-bars 34 in opposite vertical directions and a downstroke will pull said bars in reverse directions. The uprights 31, straps 32, and antifrictional rollers 33 are removably bolted together, and the upper devices of this character are particularly easily disconnected and assembled to allow shifting or adjustment of the twist-ers or supplemental additions and decrease in the number used. By loosening and disconnecting the upper straps 32 and rollers 33 the rack-bars 34 can be spread apart a greater distance by reason of the absence of any obstruction between the intermediate straps, and the twist-ers 35 can then be moved closer together or farther apart, and as the upper ends of the said bars are open additions to or depletion in the number of twist-ers can be accomplished, and after attaining the desired adjustment or addition or reduction in number the bars are restored to normal position and the upper straps 32 and antifrictional rollers 33 assembled. At the time the twist-ers are changed in vertical elevation or number the reels 18 are correspondingly elevated or depressed and their number augmented or depleted.

The handle 41 of the lever 39 and the crank-handle 30 of the shaft 28 are comparatively close together on the same side of the main frame, so that one operator can readily reach both and control the operation of the entire machine.

To prevent the reel and winding frames from being drawn inwardly or warped by the longitudinal strain of the strands or runners, a spreader 49 is employed and comprises parallel longitudinal bars 50, connected a short distance inward from their ends by transverse stop-bars 51 and 52, the unsecured portions of the ends of said bars 50 being adapted to rest on the cap-pieces 8 and 17 and so that the stop-bars 51 and 52 have their outer edges in close engagement with the inner edges of the said cap-pieces. This spreader is removable to make the rack-bars 34 acces-

sible, and to hold it in place under ordinary conditions keepers 53 are secured to the stop-bar 51 and adapted to slip under the cap-piece 8 to obviate displacement, especially during the winding operation of the spindle or shaft 9.

To prepare the machine for operation, companion strands or runners 54 are wound on the reels 18 and the number to be used placed in the reel-frame 14 at the desired elevation and degree of separation under the control of the tension device. The rack-bars 34 are then loosened at their upper ends and spread apart to receive twist-ers 35, corresponding in number to the reels and arranged in alignment with the latter, and the strands or runners from each reel are next threaded through the twist-ers and attached to the spindle or shaft 9 by a slight winding thereon. The twisting-frame is adjusted or moved over the sills 2 by rotating the crank 30 in the proper direction and through the medium of the toothed wheels 29 and teeth 3 on the sills adjacent the winding-frame leaving sufficient space to insert the preliminary pickets or slats. The twist-ers 35 are now regularly rotated to twist the strands or runners around successively-inserted pickets or slats, and during such operation the twisting-frame is gradually fed away from the winding-frame. After a certain length of the fence has been completed or woven the spindle or shaft 9 is rotated to wind said fence-section thereon and simultaneously draw out the strands or runners for a repetitious operation and which will become contiguous proportionately to the length of the said strands or runners. In making short lengths of fence or regularly-sized panels the strands could be either first severed and wound on the reels or cut at regular intervals after the complete insertion of the pickets and again attached to the working parts where necessary. In either event the operation of the twist-ers is especially advantageous. The parts are so timed and limited in movement by a predetermined calculation that an alternate full depression and elevation of the lever 39 will rotate the twist-ers first equally in one direction to secure an inserted picket or slat and then in a reverse direction around a succeeding picket or slat, and by this means the intercepting twists of the strands or runners will be uniform and regular. The twist-ers are also held in their adjusted positions by the strands or runners threaded therethrough and will not rise or fall between the rack-bars and at the same time undue friction between the rack-bars and twist-ers is prevented.

Having thus described the invention, what is claimed as new is—

1. A fence-making machine, comprising a main frame, winding and reel frames at opposite ends thereof, reels adjustably and removably supported by the said reel-frame, a shiftable frame including vertically-movable

rack-bars, and twisters freely interposed between the rack-bars, and an operating-lever partially embracing the rack-bars and having upwardly and downwardly extending oppositely-disposed connections between the same and the rack-bars.

2. A fence-making machine, comprising a main frame, a twisting-frame including vertically-reciprocatory rack-bars with toothed twisters freely and removably interposed between them, and a lever having opposite connections directed above and below the same and movably attached to the rack-bars.

3. A fence-making machine, comprising a frame, a shiftable twisting-frame thereon, including vertically-reciprocatory rack-bars with interposed twisters between them, and a centrally-fulcrumed operating-lever having oppositely-positioned connections directed above and below the same and movably attached to the rack-bars.

4. A fence-making machine, comprising a frame, a shiftable twisting-frame thereon composed of uprights, reciprocatory rack-bars, twisters interposed between the rack-bars, upper, lower and intermediate detachable brace-straps connecting the uprights and between which the rack-bars move, and removable antifrictional rollers between the upper and lower straps to serve as bearings for said rack-bars, and an operating-lever.

5. In a fence-making machine, the combination with a main frame, of a shiftable twisting-frame thereon, including movable rack-bars adapted to be spread apart and twisters adjustably and removably interposed between said rack-bars, and an operating-lever for the latter.

6. In a fence-making machine, the combination with a main frame, of a shiftable twisting-frame thereon including vertically-movable rack-bars adapted to be spread apart, and twisters adjustably and removably interposed between said rack-bars, and an operating-lever having oppositely-positioned connections directed above and below the same and movably attached to the rack-bars.

7. In a fence-making machine, the combination of a main frame having longitudinal sills with teeth on the upper edges, a shiftable twisting-frame thereon including lower guides and cross-strips, a shaft carrying toothed wheels meshing with the teeth on the sills, and uprights between which reciprocatory rack-bars have movement and freely confine interposed twisters, a winding-shaft at one end of the frame, and an operating-lever with upper and lower oppositely-directed connections between the same and the rack-bars.

8. In a fence-making machine, the combination of a main frame having longitudinal sills with teeth on the upper edges, a shiftable twisting-frame thereon including a lower shaft with toothed wheels to engage the teeth on the sills, vertically-movable rack-bars, and adjustable and removable twisters interposed

between the rack-bars, a reel-frame at one end of the main frame having reels adjustably and removably mounted therein, a winding spindle or shaft at the opposite end of the said main frame, and an operating-lever connected to the rack-bars.

9. In a fence-making machine, the combination of a main frame having sills with teeth, a twisting-frame shiftable thereon and including a lower shaft carrying toothed wheels to engage the teeth of the sills; vertically-reciprocatory operating-bars, and twisters interposed between said operating-bars, a winding spindle or shaft at one end of said main frame, and a lever for actuating said operating-bars.

10. In a fence-making machine, the combination of a main frame, a twisting-frame shiftable mounted thereon and including uprights; reciprocatory rack-bars, twisters freely interposed between said rack-bars and upper, lower and intermediate strap-braces, an operating-lever having its fulcrum supported by the intermediate braces, and connections above and below the lever and on reverse sides of the fulcrum and movably attached to the rack-bars.

11. In a fence-making machine, the combination of a main frame having intermediate wire-strand or runner twisting devices thereon, a reel-frame at one end of the said main frame, a winding-frame at the opposite end, and a spreader removably bearing against inner portions of said reel and winding frames.

12. In a fence-making machine, the combination of a main frame, a reel-frame at one end thereof, a winding-frame at the other end, and a spreader removably interposed between said reel and winding frames.

13. In a fence-making machine, the combination of a main frame, a reel-frame at one end thereof, a winding-frame at the other end, and a spreader comprising opposite longitudinal bars connected by under cross-stops located inwardly from the ends of said bars.

14. In a fence-making machine, the combination of a main frame, a reel-frame at one end thereof, a winding-frame at the other end, and a spreader including opposite longitudinal bars connected by under cross-stops located inwardly from the ends of said bars, keepers being secured to one of the said cross-stops.

15. In a fence-making machine, the combination of a reel-frame having a series of reels with end rims or flanges and a continuous tension device extending the full height of said frame and engaging the end flanges of the reels.

16. In a fence-making machine, the combination of a reel-frame having a series of reels adjustably and removably mounted therein and provided with end rims or flanges, and a tension device extending over the full capacity confines of said frame and having

spaced edges to receive the said reel rims or flanges.

17. In a fence-making machine, the combination of a reel-frame having a series of reels
5 therein, and a continuous non-differentiating tension device adapted to bear with equal friction on the ends of the reels.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

HENRY A. DE CHENNE.

Witnesses:

W. S. FILE,

T. J. BYFIELD.