

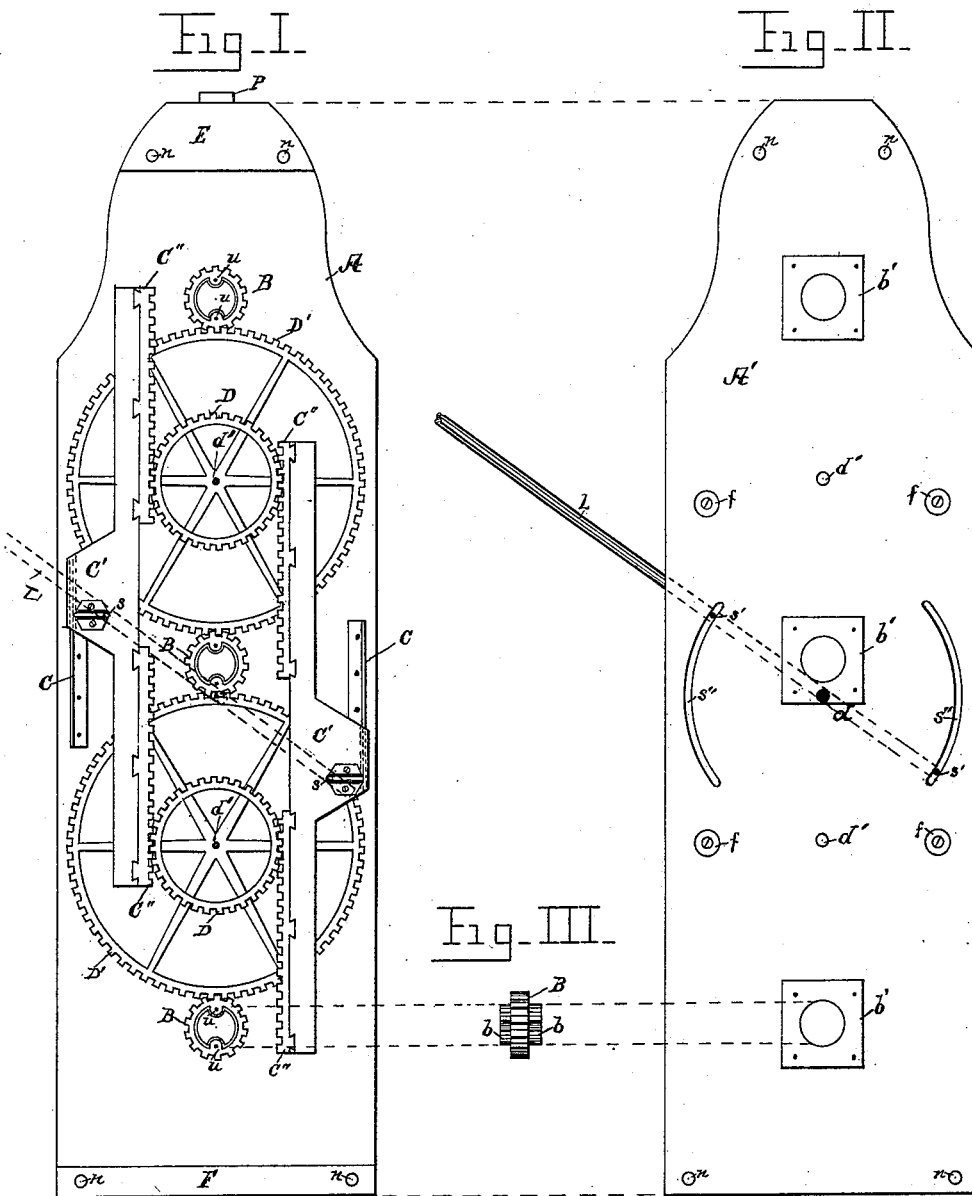
(No Model.)

2 Sheets—Sheet 1.

W. R. HARMON.
PICKET FENCE MACHINE.

No. 419,438.

Patented Jan. 14, 1890.



WITNESSES.

A. M. Metcalf,
J. M. Howe.

INVENTOR.

Willard R. Harmon,
By Martin Metcalf,
Atty.

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Fig. IV.

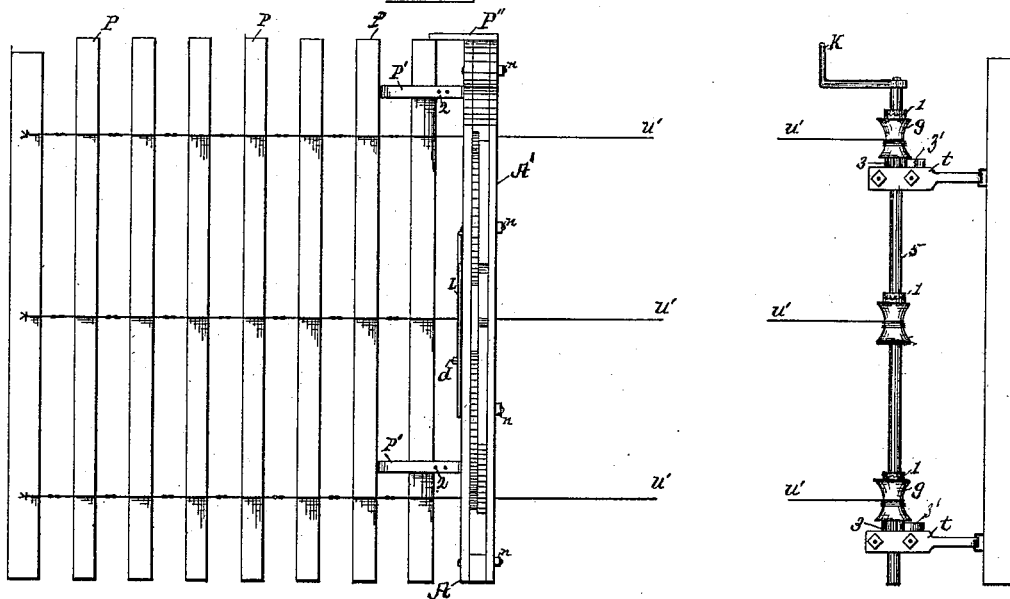
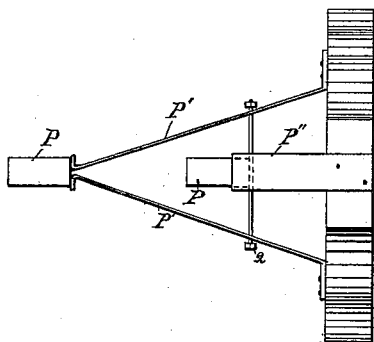
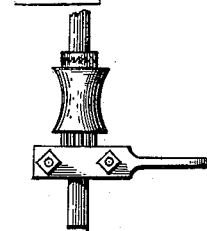


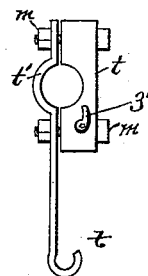
Fig-V-



F19-VII.



Fig_VI_



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UNITED STATES PATENT OFFICE.

WILLARD R. HARMON, OF BATTLE CREEK, MICHIGAN.

PICKET-FENCE MACHINE.

SPECIFICATION forming part of Letters Patent No. 419,438, dated January 14, 1890.

Application filed September 17, 1889. Serial No. 324,183. (No model.)

To all whom it may concern:

Be it known that I, WILLARD R. HARMON, a citizen of the United States, residing at Battle Creek, in the county of Calhoun and State of Michigan, have invented certain new and useful Improvements in Picket-Fence Machines, of which the following is a specification.

My invention relates to that class of machines intended for fence-building or weaving the pickets in the wires, either in the shop or field, and has for its object the greatest simplicity of parts and ease of operation combined with rapidity of execution.

The invention consists in certain peculiarities in the construction, arrangement, and combination of the various parts, substantially as will be hereinafter set forth, and particularly pointed out in the subjoined claims.

It also consists in a novel means for preserving the parallel position of the pickets and the distance between the same.

In the accompanying drawings, illustrating my invention, and in which the same letters and figures of reference are used to designate the same parts in the several views, Figure I is a front side elevation of my improved picket-fence machine. Fig. II is an elevation of the same with the rear board of the main frame removed to expose the interior operating parts. Fig. III is a side elevation of one of the twister-pinions. Fig. IV is a view of the machine in operation. Fig. V is an enlarged detail view of the mechanism for spacing and preserving the parallelism of the pickets, and Fig. VI is an enlarged detail view of the means for holding and supporting the shaft in its vertical position. Fig. VII is an enlarged detail view of one of the spools for holding the unused wire and devices for holding the same and also the shaft against rotation.

A and A' respectively designate the front and rear boards of the main frame of my machine, which boards are connected together at their ends by strips E F, which are of sufficient thickness to provide requisite space between the boards A A' for the free operation of the twisters and intermeshing pinions, the said strips and side boards being secured to-

gether and the frame completed by bolts and nuts *n*, as shown.

B designates twister-pinions, of which three are shown in the accompanying drawings; but to such number I obviously do not wish to be understood as limiting myself, as the number of twisters used depends in a great measure on the fancy of the builder and on the requirements of the fence. These twister-pinions are provided with hubs or journals *b b*, of considerable diameter, which have their bearings in the metal plates *b'*, fixed on the inside of the boards A A', (see Fig. II,) and extending longitudinally through the extreme outermost circumference of these journals are seen the large apertures *n n*, for affording a free passage of the wire strands, with their necessary splices for purposes common to this class of machines.

Firmly fixed to the inside A of the machine-frame are situated the tracks or "ways" C C, on which the vertically-reciprocating bars C' C' slide when operated by means of the hand-lever L, (see Figs. II and IV,) and the said bars C' are provided on their outer central parts with projections which carry fixed horizontally-slotted irons *s s*, in which the fulcrum bolts or lugs *s' s'* of the hand-lever L engage, as will appear presently. The lever L reciprocates in about the fourth part of a circle, or so much thereof as is determined by the number of turns the operator desires to give to the wires on the central pivotal bolt *d*. This bolt is firmly fixed to the middle bearing-plate *b'* of the board A', and it projects therethrough at a right angle and forms a stud or pivot on the outside of the twister-frame, on which the lever L reciprocates and to which it is secured by a nut or key, and from *d* as a center the inwardly-curved arc-shaped slots *s'' s''* are provided through the board A', through which pass and play the said fulcrum-lugs *s' s'* of the lever L for engagement with the horizontally-slotted irons of the reciprocating bars C' C', heretofore described. The fulcrum-lugs *s' s'* of the lever L are free to reciprocate horizontally in the slotted irons *s s*, the length of the reciprocation of said fulcrum-lugs being equal to the distance between the chord of the arc-shaped

slot in the board A' of the main frame and the central portion of said arc, or, in other words, between the chord and that portion of the slot situated farthest therefrom, as clearly shown in Figs. I and II. In Fig. I is shown the location of the fulcrum-lugs in the slotted irons when the racks are respectively in their lowermost and uppermost positions. This horizontal reciprocation of the fulcrum-lugs is necessitated by the fact that the operating-lever moves in the arc of a circle while the rack-bars are required to move vertically.

The inner edges of the bars C' C' are provided with toothed rack-bars C'' C'', fixed by dovetailing or otherwise, while the opposite outside top and bottom portions of the bars C' C' come in contact and engage with the friction-wheels *f f f* of the board A'. (See Fig. II.) The toothed rack-bars C'' C'' engage with the pinions D D, which are fixed to shafts having their bearings in the casings A A'. These shafts also carry larger pinions D' D', made fast to the pinions D D, or they may be cast integral therewith, whose diameter corresponds with the distance between the central wire-twister pinion B and the top and bottom ones, so that the reciprocation of the lever L shall communicate a like movement of the said rack-bars and wire-twisters by reason of the intermeshing teeth thereof, whereby the fence-pickets are woven easily and expeditiously within the embrace of the wire strands, as clearly seen in the drawings. The said wire strands *u' u' u'*, which consist of pairs, are stapled to the fence-post, as seen in Fig. IV, where a portion of completed fence appears with my new machine in working position. The proper tension of said wires I obtain by means of a crank K and vertical shaft 5, on the latter of which the spools *g g g*, containing the unused wire, are securely held by means of the well-known ratchets 1 3, the ratchets 1 being designed to prevent rotation of said spools independent of the shaft 5, and the ratchets 3 to prevent rotation of said shaft, said ratchets 3 being engaged by pawls 3', all of which will be readily understood, and the shaft 5 is held in its vertical position by means of the wooden friction-clamp *t*, the coupling-hook *t'*, and the threaded bolts and nuts *m m*, as seen, the hook or curved end of the iron part of said clamp engaging with a suitable staple of the fence-post at the extreme right of the line of fence-building.

Near the top and bottom of the board A' of the inclosing-box or twister-frame, reaching rearward and resting against the last picket P placed in position, (see Figs. IV, V, and VII,) is situated the double-spring spacer, having arms P' P', whose extreme ends are bent outwardly, the ends resting against the picket and their opposite spreading arms bolted to said board, so as to form a triangle whose base is the board A' and opposite angle is the center line of the fence and picket P, as clearly seen in Fig. V. These spring-arms

are pierced with a series of holes through which passes a transverse and removable rod 2, whose purpose is to regulate the distance between the pickets by adjustment of the said rod in any of the said holes.

Reaching rearward from the top of the twister-frame, centrally thereof, is fixed the horizontal gage P'', the object of which will be better seen by noting the mode of operation of my invention, which is as follows: The wire strands are first drawn slightly tight by simply turning the spools *g g g* on their independent ratchets 1 3 by hand, after which the whole are drawn taut by means of the crank *k* and firmly held by means of the clamp, as clearly shown in Fig. VI. A fresh picket is now placed in position vertically and centrally between the spring-arms P' P', with its forward edge resting against the transverse adjustable rods 2 2 and its top touching the under side of the horizontal gage P'' when the hand-lever L is thrown down or up, as the case may require, and the fresh picket is securely clasped and woven within the embrace of the wire strands *u u* by a single stroke. The twister-frame is then pushed along the wires until the opening spring-arms P' P' pass the newly-placed picket and again come together at rest, ready for another picket.

As will have been seen, a powerful leverage is obtained by my present method of a hand-lever in lieu of the common crank mostly used for operating fence-wire twisters, at the same time that the work is done much more easily and expeditiously by a single movement up and down of the said lever.

Having thus clearly disclosed and described my invention and illustrated its mode of operation, what I claim, and desire to secure by Letters Patent of the United States, is—

1. The combination, in a picket-fence machine, of vertically-reciprocating rack-bars, pinions D, engaging the same, wire-twisters, and gearing for transmitting motion from said pinions to said twisters.

2. The combination, in a picket-fence machine, of vertically-reciprocating rack-bars, pinions D, engaging the same, pinions D', revolving with said pinions D, and twister-pinions B, engaging said pinions D', all arranged substantially as shown, and adapted to operate as set forth.

3. In a picket-fence machine, the combination, with the main frame, vertically-reciprocating rack-bars, a hand-lever for operating the same, having its pivotal point within the main frame, and pinions D, the teeth of which intermesh with the teeth of the rack-bars, of wire-twisters and mechanism for transmitting motion from said pinions D to said twisters.

4. In a picket-fence machine, the combination, with a main inclosing box or frame having arc-shaped slots, of vertically-reciprocating rack-bars, a hand-lever for operating said rack-bars and connected therewith by projections working within said slots in the main

frame, wire-twisters, and gearing for transmitting motion from said rack-bars to said twisters.

5 5. In a picket-fence machine, the combination, with a main inclosing box or frame having arc-shaped slots, of vertically-reciprocating rack-bars provided with slotted irons, a hand-lever for operating said rack-bars, having its pivotal point within said inclosing box
10 or frame and provided with lugs engaging the slotted irons of the rack-bars, wire-twisters, and gearing for transmitting motion from said rack-bars to said twisters.

15 6. In a picket-fence machine, the combination, with an inclosing box or frame having arc-shaped slots, vertically-reciprocating rack-bars, and a hand-lever for operating said rack-bars and connected therewith by lugs working within said slots in the main frame,
20 of pinions D, engaging said rack-bars, pinions D', larger in size than said pinions D and revolving therewith, and twister-pinions, the teeth of which intermesh with the teeth of pinions D', all substantially as shown and
25 described.

7. The combination, with a picket-fence ma-

chine, of a spacer for the pickets, consisting of converging spring-arms projecting from said machine, and an adjustable rod extending across the space between said arms and
30 adapted to regulate the distance between the pickets.

8. The combination, with a picket-fence machine provided with a spacer consisting of converging arms and an adjustable transverse
35 rod, of a gage projecting horizontally from the upper end of the machine, all substantially as shown and described.

9. The combination, with a picket-fence machine, of a wire-tension device consisting of
40 a vertical shaft having spools provided with ratchets, a friction-clamp *t*, a coupling-hook *t'*, and threaded bolts and nuts, all substantially as shown and described.

In testimony that I claim the foregoing I
45 have hereunto set my hand this 15th day of August, A. D. 1889.

WILLARD R. HARMON.

Witnesses:

FRANK W. CLAPP,

JOHN S. SANFORD.