

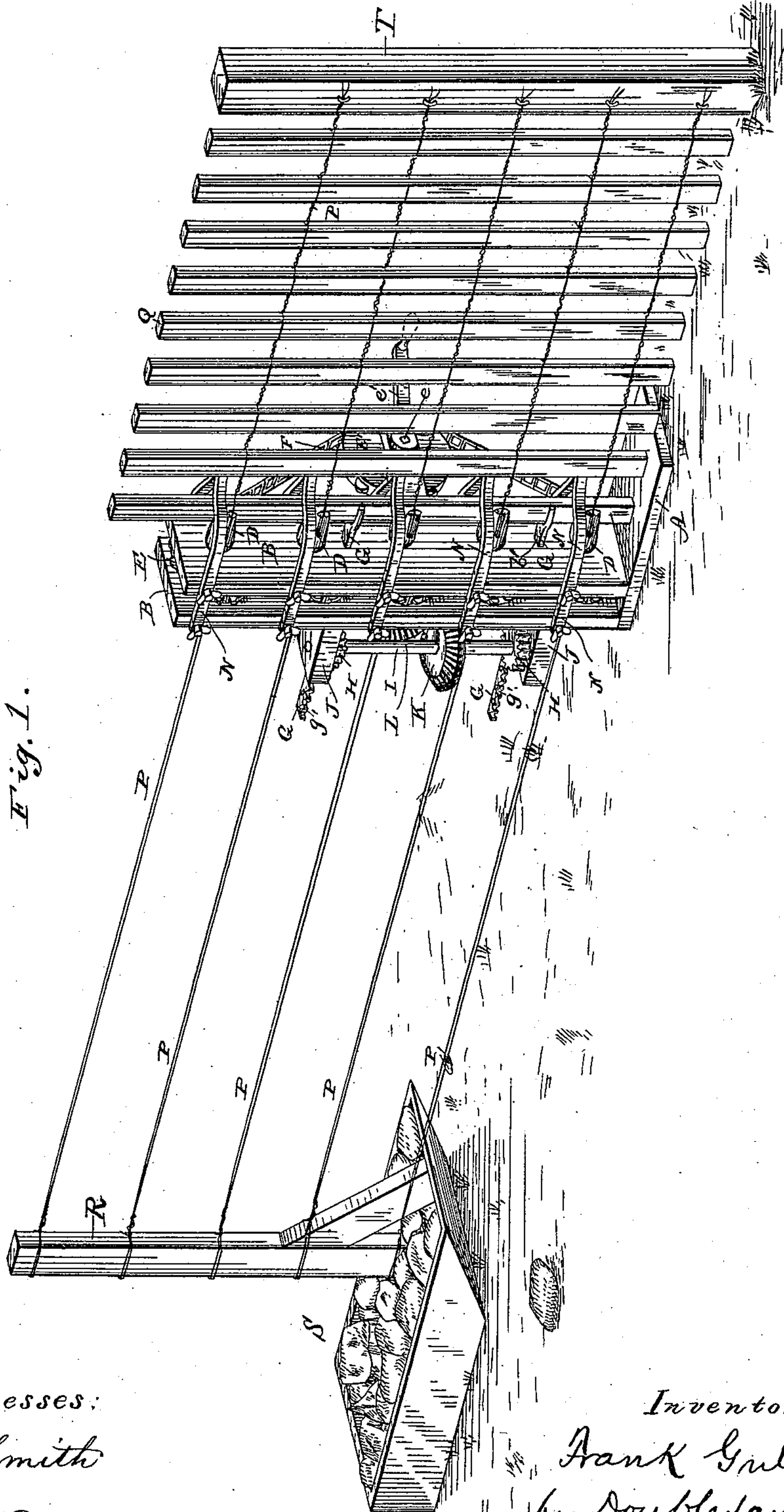
(No Model.)

2 Sheets—Sheet 1.

F. GULLING.  
FENCE MAKING MACHINE.

No. 354,861.

Patented Dec. 21, 1886.



Witnesses:  
E. D. Smith  
J. S. Barker.

Inventor:  
Frank Gulling  
by Doubleday & Bliss  
attys

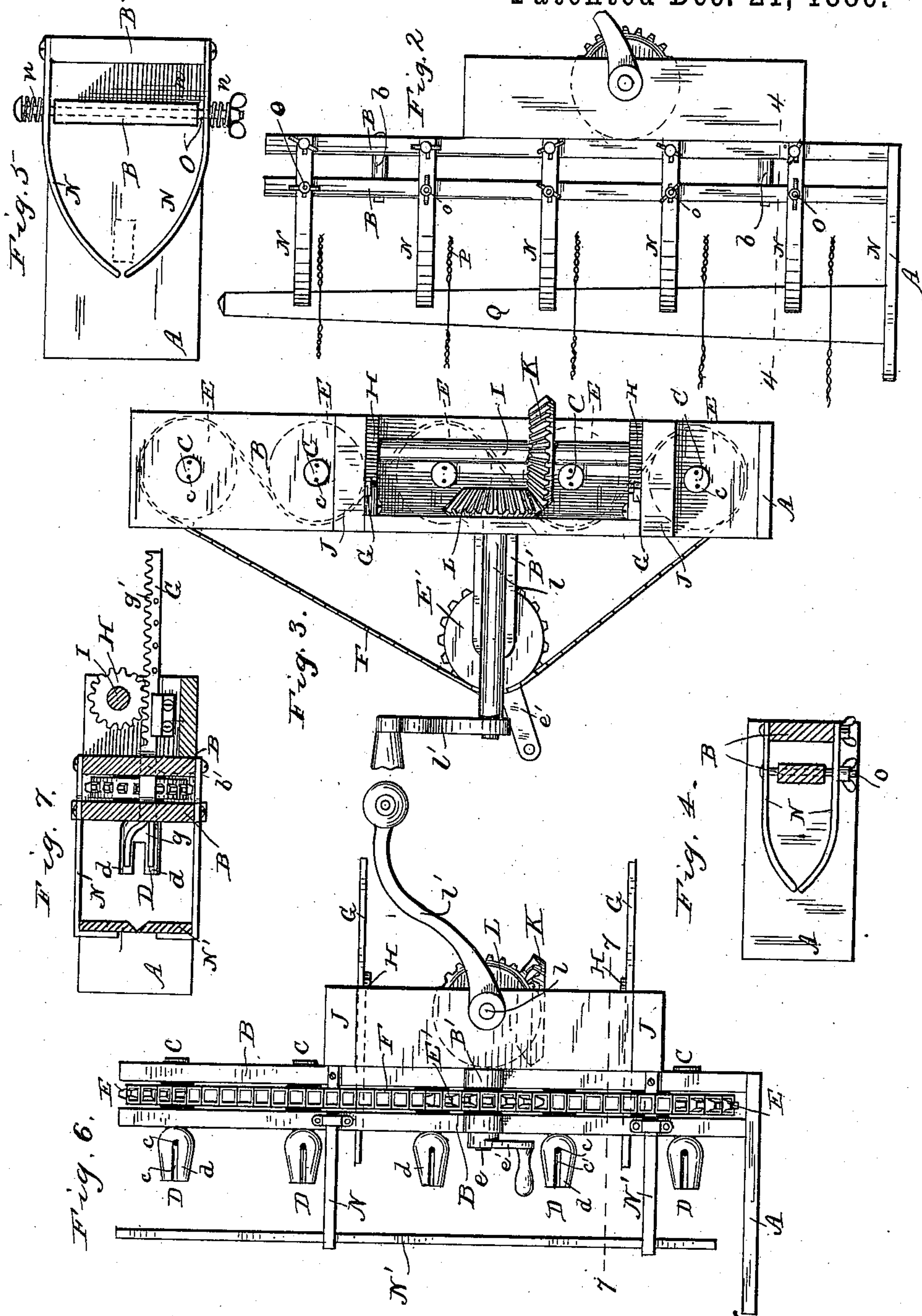
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# UNITED STATES PATENT OFFICE.

FRANK GULLING, OF MAXIMO, OHIO.

## FENCE-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 354,861, dated December 21, 1886.

Application filed June 19, 1886. Serial No. 205,714. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK GULLING, a citizen of the United States, residing at Maximo, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Fence-Making Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 is a perspective view of a fence-making machine containing my invention, the parts being shown in the positions occupied immediately after a picket has been inserted and before the machine has been put into operation. Fig. 2 is a side elevation of a portion of a machine having its parts adjusted for a tapering picket, this view showing the picket after the wires have been twisted behind it, and just as the machine is about to be moved into position for attaching the next picket. Fig. 3 is a rear view. Fig. 4 is a horizontal section on the line 4 4, Fig. 2, looking downward. Fig. 5 is a view similar to Fig. 4, showing a modification. Fig. 6 is a side view of the machine, illustrating a modification of certain of the parts. Fig. 7 is a section on the line 7 7, Fig. 6.

This invention relates to improvements upon machines adapted for use in making wire and picket fences, particularly that class or subdivision of these machines in which the twist-ers are arranged vertically, and which are adapted to construct a fence in the field and along the line it is intended the fence should occupy.

In the drawings, A represents the base, from which rise two parallel uprights, B B, suitably braced, as at b, these parts forming the main frame, upon which are mounted and supported the various operative parts of the machine.

C C are the twister-shafts, mounted in the uprights B, and carrying at their forward ends the twister-heads D.

E E are sprocket-wheels mounted upon shafts C, between the uprights B, over which sprocket-wheels passes an endless chain, F, which also engages with a driving sprocket-wheel, E', supported on a shaft, e, which is journaled in a bracket or arms, B', projecting laterally from uprights B.

e' is a crank on the projecting end of shaft e, by which it is operated, and whereby the twist-ers may all be simultaneously revolved.

The twister-shafts are each provided with two apertures, c, which are extended as grooves c' in the outer faces of the jaws d of the twister-heads. Through these apertures and grooves pass the wires P; but as these parts are well known and may be varied in many ways, and form no part of my invention, they need not be further described.

The pickets or slats Q of the fence are fed down from the top between the jaws d of the twister-heads, these jaws serving as guides to insure that the pickets shall be held in a vertical position and guided properly relatively to the wires, and also serving to separate the wires, so that one strand shall be upon each side of the slat or picket, in proper position for the twisting operation.

I will now describe the devices by which the slat is forced forward from between the jaws d and into position to have the wires twisted immediately behind it.

G G represent sliding bars moving in apertures or slots b', formed therefor in the uprights B. They are forked, as at g, at their forward ends, and at their rear ends are provided with racks g', with which engage pinions H, mounted upon a vertical shaft, I, which is journaled in standards, brackets, or plates J, projecting from the rear upright, B.

K is a bevel-pinion keyed to shaft I and gearing with a bevel-wheel, L, mounted upon a transverse shaft, l, which at its outer end carries a crank, l'.

It will be seen that when the crank l' is turned in one direction the bars G, through the above-described train of gearing, will be slid forward, and when moved in the opposite direction they will be retracted. The forward forked ends of the bars are so arranged that when a picket is in place between the jaws of the twister-heads the fingers of each bar will lie upon opposite sides of the picket, so that if the crank l' be moved in the proper direction the bars G will be moved forward and will carry with them the picket out from between the jaws of the twist-ers, which may then be revolved and the wire twisted behind the picket. As soon as the twisting of the wires begins there is a tendency to force the machine away from the newly-inserted picket—that is, toward the post R—and the resulting movement of the machine would ultimately



draw the forked bars G away from the picket and their grip would be lost. This is especially true in making a fence where there is any incline, as on a hillside.

5 In order to hold the machine to its work—that is, to prevent it from moving away from the picket around which the wires are being twisted—I provide it with holders or stops, which prevent the aforesaid movement, they  
10 being so situated that the bars G can force each picket out until it comes in contact with the said holders or stops. After the picket is thus driven against the holders or stops the twisting is effected, and then the stops are so  
15 opened or withdrawn as to escape from the picket, whereupon the machine can move the proper distance along the wires away from the pickets toward post R.

I have shown these holders or stops as each  
20 consisting of a pair of spring-arms, N N, secured to the uprights and projecting therefrom forward in front of the twisters, the outer ends of these spring-arms approaching each other so closely that a picket cannot pass between  
25 them without first spreading them apart somewhat, which spreading, however, is permitted by reason of the elasticity of the arms. The rear ends of these elastic bars or arms N are secured fast to the rear upright, B; but  
30 the other upright is either made narrower than the rear one or is recessed at the points where the arms N pass it, as shown in Fig. 4, in order that the opposing arms may be adjusted toward or from each other at this point. This  
35 adjustment is desirable, as the pickets used upon a single machine at different times frequently differ much in thickness, and in order to secure the most effective operation of the machine the outer ends of the arms should lie  
40 closer together when operating upon thin pickets than upon those which are thicker. This adjustment may be effected in various ways, that which I now prefer being illustrated in Fig. 4, wherein the arms themselves are  
45 depended upon for elasticity, and screw-rods or bolts O pass through the said arms and through the forward upright, (one being used for each pair of arms,) and upon which screw-rods are mounted thumb-nuts o, whereby the  
50 tension upon the bars or arms may be varied, as will be readily understood.

In the construction shown in Fig. 5 the elastic or spring action of the stops is wholly or in part dependent upon springs n, mounted  
55 upon the rod O, outside the arms or bars N. Any desired number of these spring-stops may be employed—three, or one for each twister, being an advantageous arrangement. I make each one of these stops separate from  
60 all the others, for the following reasons: It is often desirable to use split or scrap stuff for the pickets or slats, and, as the pickets from such material often differ very much in their cross dimensions at various points  
65 throughout their length, it would be practically impossible to use such material on a machine like mine were the spring-stops all con-

nected together and movable simultaneously, because, supposing the slat around which the wire is to be twisted be larger in all its dimensions at its lower end than it is at any other  
70 part throughout its length, when the arms, which necessarily move simultaneously and similarly, carry it forward, the larger lower end would at that point separate the arms or  
75 bars, and hence separate them (because of their being united) throughout their entire length, which would result in the upper and middle portions of the picket receiving little or no support from the stops, and thus inter-  
80 fering materially with the proper wiring of the slats or pickets; but my above-described arrangement entirely overcomes this difficulty, because, no matter what may be the size of any particular part of the picket relative  
85 to any other part, each stop will clamp and hold the portion of the picket opposite which it is situated without relation to any of the other stops, thus enabling an irregular picket to be as perfectly supported and wired as one  
90 which is regularly formed throughout its entire length. Again, when using material which runs substantially uniformly, but yet is of different sizes throughout its length—say when the pickets taper toward one end—the upper arms,  
95 N, should be brought closer together than are the lower ones, in order to secure a substantially uniform pressure or holding of the picket at the different points throughout its length, and this I accomplish by so construct-  
100 ing the stops that the tension may be separately adjustable at different vertical points.

The rear ends of the bars N are slotted or provided with a series of apertures, through which pass the bolts or screws by which they  
105 are connected to the rear post, B, this permitting them to be so adjusted that the forward ends thereof may be moved nearer to or farther from the twisters. This, as will be readily seen, makes it possible to vary the  
110 space between each two adjacent pickets, for by setting out the stops the pickets will be placed farther apart, and by setting them in, closer together.

I do not wish to be limited to the exact construction of parts herein shown, as they may be varied more or less and still retain the novel features of my invention. In Figs. 6 and 7 is shown a modification, in which, instead of having the outer ends of the arms G  
120 brought inward toward each other, these arms are substantially straight throughout their entire length, and have attached to their front ends plates N', provided with beveled inner edges, in contact with which the pickets are  
125 forced by the bars G. These plates N' may be continuous from top to bottom of the machine, each one being supported by two or more spring-bars, N, and such a construction is illustrated in Fig. 6.  
130

I will now describe the operation of the machine. The wires are passed through the apertures in the twister-shafts, the grooves in the jaws of the heads B, and to the starting-



post T, to which they are made fast. The other ends of the wires are secured by clamps or otherwise to an upright or post rising from a boat or drag, S, which is loaded with stones or other heavy objects. This boat is placed in such position that the wires will be drawn taut and made to follow the proposed line of fence. The machine is then moved up close to the starting-post, the twisters given several revolutions, the bars G drawn back, and a picket slid down between the jaws of the twisters and the forked ends of the arms G, as shown in Fig. 1. The crank V is then given a partial rotation, which moves the bars G forward, and as the picket is stationary against the wire the machine moves until the arms or stops engage with the picket on the side opposite the machine, the tension upon the arms N being sufficient to prevent the picket from passing between them without there being considerable force exerted. When in this position, the wires are twisted by rotation of crank e', the necessary amount of wire for the twists being taken up from any slack which there might be in the line-wires, or in case they be taut, as they will soon become, by a slight advance of the boat S toward the machine. After the wires have been twisted, thus securing the slat, the crank V is given a further movement, and the force becomes great enough to separate the stops N, and have them slide or move over the picket and escape therefrom, after which the bars G are withdrawn into the position shown in Fig. 1, when the above-described operation is repeated, except that the direction of rotation of the twisters is reversed as each alternate picket is secured in place, in order to prevent the wire becoming twisted or tangled between the machine and the post R. In brief, the steps in the ordinary operation of the machine are, first, inserting the picket; second, pushing the picket into the bight of the wires by the bars G; third, continuing the pushing force, and since the picket can be pushed no farther forward than the bight, the machine yields and is pushed backward until its stops N bear against the picket; fourth, twisting the wires, while the stops N, pressing against the picket, prevent the machine from yielding farther backward; fifth, exerting a supplementary pressure on the bars G to compel the machine to move backward sufficiently far to pull the stops N over the last-inserted picket; and, sixth, drawing the bars G back to their initial position, after which another picket can be inserted and the same series of operations followed.

It will be seen that after the machine has commenced its operations each time the crank V is turned in the direction to force the bars G forward the said bars actually remain stationary relatively to the fence, while the other parts of the machine are moved backward away from the starting-posts T, and in order to readily permit this the machine may be mounted upon wheels or casters, if desired. After a picket has been inserted, and while it

is being pushed into the angle or bight of the wires, the holders or stops N are so arranged that at their ends they can engage with the picket on the side opposite to the machine, which engaging-ends are capable of yielding, but not until a force has been applied greater than that exerted in the twisting of the wires.

A machine of the above-described construction is cheap in construction, effective in its work, and easy of operation. By arranging the two cranks at the same side of the machine, as I have shown them, a single operator may work the machine without necessitating his moving from place to place around the machine, both cranks being situated within convenient reach of the operator when standing by the side of the machine.

What I claim is—

1. The combination of the supporting-frame, the wire-twisters, the sliding bar or bars which move the twisters away from the picket, the spring-stop in front of the twisters against which the picket is forced by said sliding bar or bars, and means for adjusting the tension of said spring-stop, substantially as set forth.

2. The combination of the supporting-frame, the wire-twisters, the sliding bar or bars which move the twisters away from the pickets, the stop in front of the twisters against which the picket is forced, and means, substantially as described, for adjusting said stop toward and from the twisters, whereby the distance between the pickets may be varied, substantially as set forth.

3. The combination of the supporting-frame, the wire-twisters, the sliding bar or bars, and the stops separate from each other, arranged in a vertical series in front of the twisters, and against which the picket is forced, substantially as set forth.

4. The combination of the supporting-frame, the wire-twisters, the sliding bar or bars which force the twisters away from the pickets, the spring-stops separate from each other, arranged in front of the twisters, and against which the picket is forced, and devices for adjusting the tension of said spring-stops independently one of the other, substantially as set forth.

5. The combination of the supporting-frame, the wire-twisters, the sliding bar or bars which separate the pickets from the twisters, and the stops in a vertical series separate from each other and separately adjustable toward and from the twisters, substantially as set forth.

6. The combination of the supporting-frame, the wire-twisters, the sliding bar or bars which force the twisters away from the pickets, stops consisting of arms extending in front of the twisters and having their outer ends approaching each other, and means for adjusting the outer ends of said arms toward and from each other, substantially as set forth.

7. The combination of the supporting-frame, the wire-twisters, the sliding bar or bars which separate the pickets from the twisters, stops consisting of arms extending in front of the twisters and having their outer ends approach-



ing each other, and means, substantially such as described, for independently adjusting the outer ends of the arms of the several stops toward or from each other at different points 5 relatively to the length of the picket, substantially as set forth.

8. The combination of the supporting-frame, the wire-twisters, the sliding bar or bars which separate the pickets from the twisters, a series 10 of independent stops arranged in front of the twisters, and consisting each of a pair of arms the outer ends of which approach other, and means, substantially as described, for adjusting the outer ends of said pairs of arms toward 15 and from each other independently, as set forth.

9. The combination of the supporting-frame, the wire-twisters, the sliding bar or bars which separate the pickets from the twisters, stops 20 arranged in front of the twisters, and consisting of the arms N, securely attached at their rear ends to the main frame and adjustably connected to the main frame at a point between their ends, whereby the front ends of said arms 25 may be adjusted toward and from each other, substantially as set forth.

10. In a fence-making machine, the combination of the main frame, the twisters, the sliding bars G, which separate the pickets from the twisters, provided at their rear ends with 30 racks g, pinions which gear with said racks, the shaft I, on which said pinions are mounted, bevel-wheels K L, shaft l, extending to one side of the machine, and the crank l', for operating said shaft l, substantially as set forth. 35

11. In a fence-making machine, the combination of the main frame, the twisters, the wheels by which said twisters are rotated, the crank e', for operating said wheels, situated at one side of the machine, the sliding bar or bars 40 which separate the pickets from the twisters, devices, substantially as described, for reciprocating said bars, and a crank for operating said devices, situated on the same side of the machine as crank e', substantially as set forth. 45

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

FRANK GULLING.

Witnesses:

HENRY FISHER,  
J. P. FAWCETT.