(No Model.) 2 Sheets—Sheet 1.

M. GLEASON.

FENCE MAKING MACHINE.

No. 423,316. Patented Mar. 11, 1890.

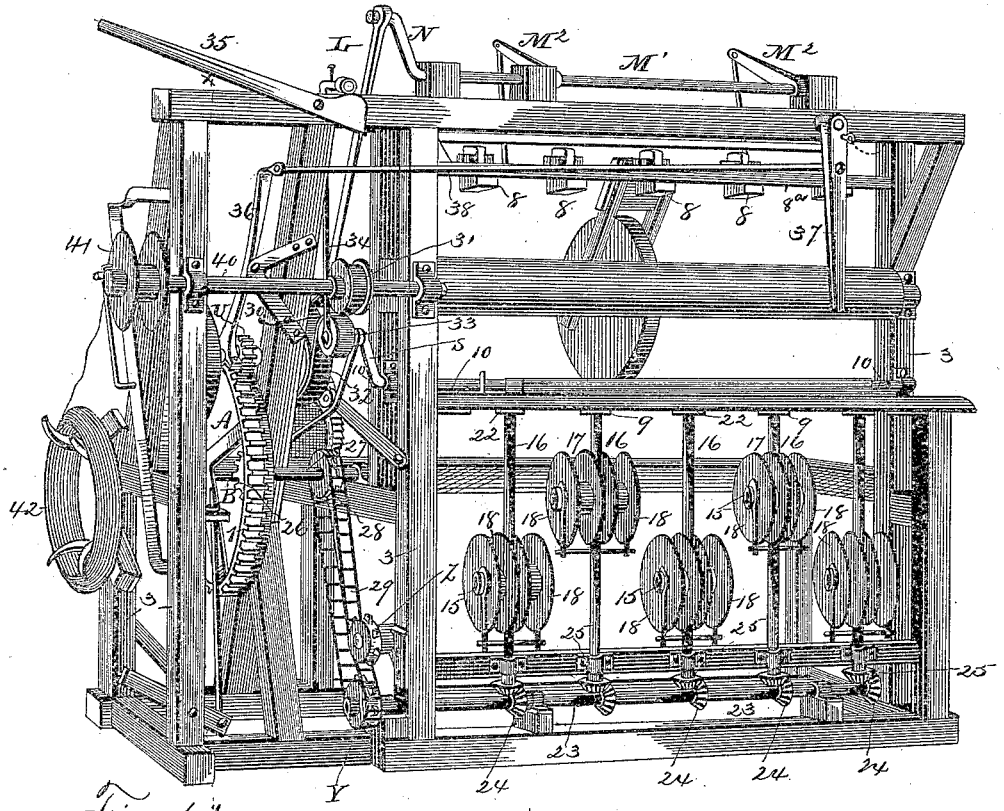

Fig. 1.

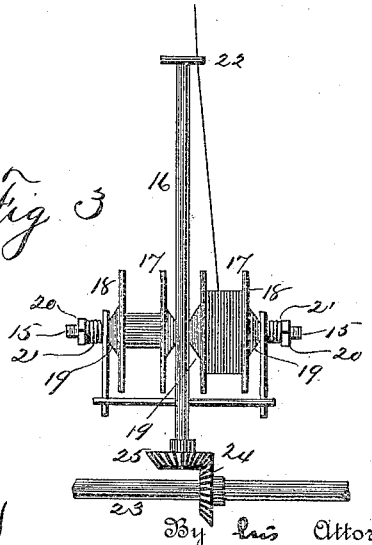

Fig. 3

Witnesses
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S. G. Hottinghamm

Inventor
M. Gleason.
By his Attorney
H. A. Seymour.

(No Model.) 2 Sheets—Sheet 2.

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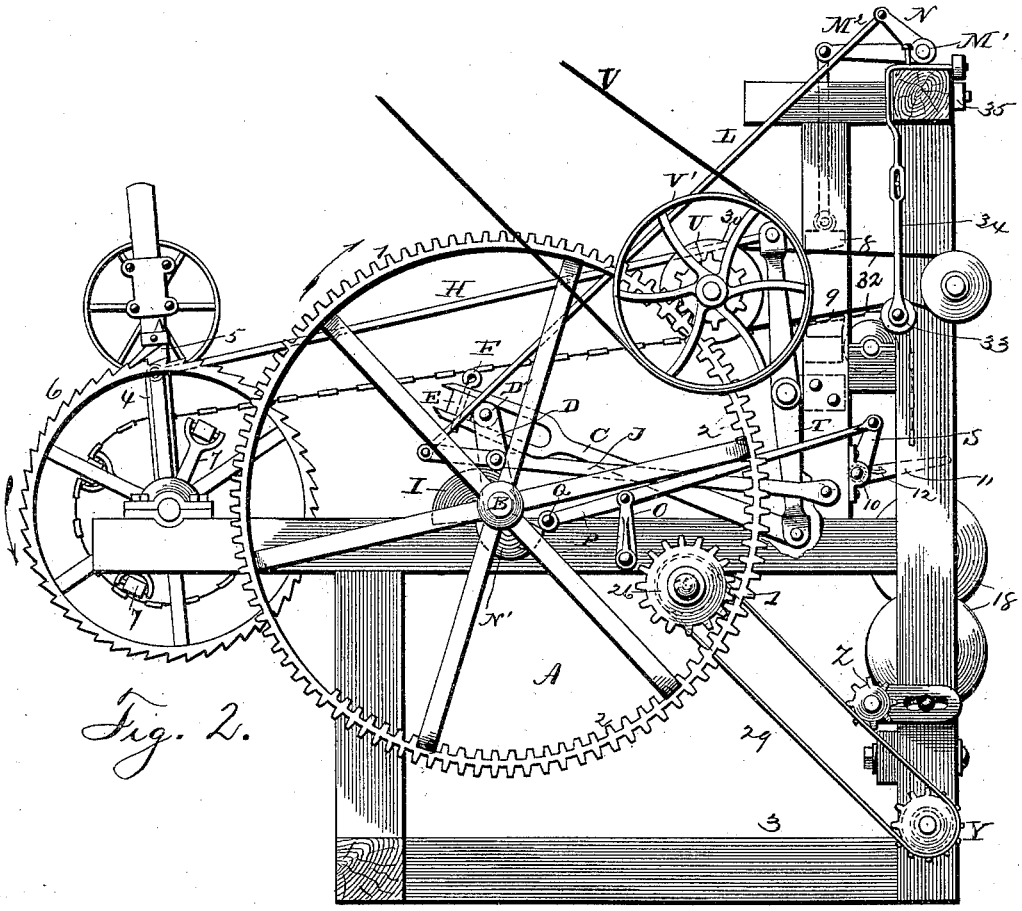

Fig. 2.

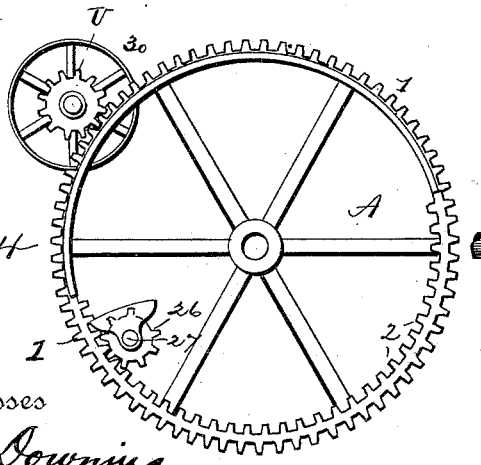

Fig. 4

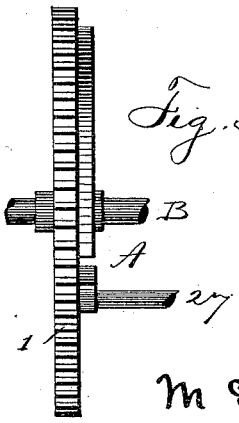

Fig. 5

Witnesses
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UNITED STATES PATENT OFFICE.

MICHAEL GLEASON, OF LIBERTY, INDIANA, ASSIGNOR TO THE RITER'S METALLIC PICKET FENCE COMPANY, OF SAME PLACE.

FENCE-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 423,316, dated March 11, 1890.

Application filed November 25, 1889. Serial No. 331,516. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL GLEASON, of Liberty, in the county of Union and State of Indiana, have invented certain new and useful Improvements in Fence-Making Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in fence-making machines, the objects being to provide means for varying the distance between the slats of a fence in the manufacture of a continuous roll of fencing, and to provide mechanism for holding the slats and for the intermittent motion of wire-twisting mechanism.

A further object is to provide for operating the spooling mechanism independently of the other parts of the machinery or with it, as may be desired.

With these ends in view my invention consists in certain novel features of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of the machine, taken from the rear, the reel 7 being omitted. Fig. 2 is a view in section of same on line *x x* of Fig. 1. Fig. 3 is a view of one of the wire-twisting devices detached; and Figs. 4 and 5 are views in side and end elevation, respectively, of the master-wheel and connected parts.

A represents the main drive-wheel of the machine. This wheel is furnished with external cogs 1 1 on its periphery and with internal cogs 2 2 on a portion, preferably about a half, of the rim. The wheel A is secured to the shaft B, and the latter is journaled in suitable boxes for the purpose on the frame-work 3 3 of the machine.

As one of the primary features of the present invention consists in the mechanism for regulating and varying the space between the slats, I will proceed first with a detailed description of this portion of my invention. A crank D is keyed or otherwise secured to the inner end of the shaft B and furnished on its end with a small anti-friction roller D'. A forked pitman C spans this roller at its forked end, and an adjustable block E is held between the tines of this fork at different positions by the pin F, the object of this construction being to vary the throw of the pitman caused by the movement of the crank within the opening formed in the pitman. As the size of this opening in the forked end of the pitman is decreased, the throw of the pitman is increased, and as the size of the opening is increased the throw is decreased. An oscillating lever T is pivotally supported at or near its middle on the frame, and the rear end of the pitman just described is loosely connected with the lower end of this oscillating lever. The upper or opposite end of the oscillating lever is similarly connected with a rod H, and the latter extends forward to the swinging frame 4, which, through the medium of the pawl 5, operating upon the ratchet-teeth of wheel 6, turns the reel 7, (see Fig. 2,) upon which the fencing is wound, a suitable distance at each stroke of the crank D, as hereinbefore mentioned, regulated and varied according to the desired space between slats by the position of the block E in the forked end of the pitman C.

Trip-hammers are well-known devices for pounding the wire down tight around the slats, and while I am aware of the use of such mechanism the particular combination of parts for operating these hammers in this instance constitutes a part of my invention.

A lever J is pivoted at one end to the frame of the machine and provided near the free end with an anti-friction roller. Said roller operates upon a cam I, secured to shaft B, which, as the latter revolves, forces the free end of lever J upward until the roller has ridden over its rounded portion, when the lever is dropped until again raised by the impingement of the cam beneath it. The rod L extends from the free end of this lever J, and at its opposite end is connected with the crank N on a rocking shaft M' at the top of the machine. Arms M^2 extend forward from this shaft M', and the trip-hammers 8 8 depend from the bar 8^a, secured by links or rods to these arms. These trip-hammers act in conjunction with a series of anvils 9 9, over which the fencing is drawn after the slats have been fastened in, as shown in Fig. 2. As the cam I

raises the lever, the trip-hammers are raised, and when the lever drops over the cam the hammers drop with their full weight upon the portion of the fence lying upon the anvils 9 9. The movement of these trip-hammers is so regulated that they drop at least once upon each slat. Mechanism is also devised for driving and retaining the slats snugly between the wires until the wire is twisted back of them, and this part of the invention may be described as follows: Swinging rod P is supported on the pivoted arm O, and connected at one end to the arm S, which latter is secured to the rocking finger-shaft 10, to which the fingers 11 11 are affixed. Springs 12 12 are arranged on this rocking shaft to normally raise the fingers and force them into contact with the slat and hold it between the strands of the wires until the latter have been twisted. The swinging rod P is operated by means of a cam N′ on the shaft B, which as the shaft rotates impinges against the anti-friction roller Q on the end of the rod. The cam removes the fingers for a sufficient length of time for the insertion of slats between the wires, and then the springs 12 12 act upon the finger-shaft to force the fingers against the slats, so that an alternating motion of the fingers results. As the fingers 11 are secured to shaft 10, it follows that the springs 12 also tend to turn shaft 10 in a direction to constantly hold the free end of lever P in contact with cam N′.

The twisters are shown in detail in Fig. 3. They consist of the horizontal spindle 15, secured to the vertical rotary shaft 16, supported in suitable journal-boxes in the frame of the machine. A spool 17 is located on the horizontal spindle on either side of the vertical shaft, and the wire which is wound on these spools is retained in its place by the disks 18 18. Washers 19 19 are held on the spindle outside of the disks by the burrs 20 20, and between the burrs and the washers springs or rubbers 21 21 are placed, the object of these being to regulate the tension of the spools and prevent too great or too small a feed of wire to the twisters. The wire is fed out through holes in the plate 22 on the vertical shaft, and as the spools swing around the shaft the two wires are twisted together. The twisters are revolved by the shaft 23, which carries a number of bevel gear-wheels 24 24, and these wheels mesh with similar wheels 25 25 on the lower end of the vertical shafts of the twisters. Power is communicated intermittingly to the shaft 23 through the medium of a small pinion 26, the teeth of which are meshed with the internal teeth of master-wheel A. This pinion is affixed to shaft 27, and from a sprocket-wheel 28 on this shaft a sprocket-chain 29 passes over wheel Y on shaft 23. A pinion Z is set at different positions on the frame of the machine to insure the proper tension of the chain 29. It was previously mentioned that the internal cogs 2 2 of the master-wheel A extended only half-way around. The object of this is to give an intermittent motion to the twisters, the same as to various other parts herein referred to, and the intention is to turn the twisters half the time, allowing ample time for the insertion of the slats while the twisters are idle. To prevent any lost motion during these changes, stops are formed on the gear-wheel. The number of twists given the wire between the slats may be changed by using different-sized sprocket-wheels Y.

The mechanism for spooling the wire is made a part of this machinery and can be operated independently of the fence-making mechanism—that is, the fence-making mechanism and the wire-spooling mechanism are so constructed that each may be operated independently of the other. A pulley 30 may be formed integral with the pinion U, or the pulley may be made independent of the pinion. A belt 32 extends around said pulley and also around pulley 31, mounted on the frame of the machine.

The numeral 33 represents an idle-pulley which takes up the slack in the belt which connects the two pulleys. Rod 34 connects the idle-pulley 33 and the lever 35. A lever 36 throws the pinion out of engagement with the cogs 1 1 of the wheel by which it was formerly driven. Power is communicated to this pinion by the belt V, running over pulley V′. One motion of hand-lever 37, which is connected to lever 36 by pitman 38, throws the main portion out of gear by removing the pinion U from the teeth of wheel A, and the opposite motion throws it in gear by the engagement of the pinion with the teeth of the master-wheel. This sets the spooling-shaft 40 in motion while the spool 41 is being refilled from the wire 42.

It is evident that slight changes might be resorted to in the form and arrangement of the several parts described without departing from the spirit and scope of my invention, and hence I do not wish to limit myself to the particular construction herein set forth; but,

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

1. In a fence-making machine, the combination, with a frame, a shaft, and a master-wheel and crank on said shaft, of a reel, and rods and lever connecting said reel and crank.

2. The combination, with a frame, a master-wheel, and its shaft, of a reel, rods and levers connecting the shaft and reel for automatically turning the latter, and mechanism for regulating the throw of the parts actuating the reel, mechanism for varying the space between the slats of the fence, mechanism for intermittingly holding the slats, hammers for pounding the wires against the slats, and twisters for twisting the wires, substantially as set forth.

3. The combination, with a frame, a master-wheel, and its shaft, of mechanism for varying the space between the slats of the fence,

for intermittingly holding the slats, for pounding the wires against the slats, for twisting the wires, and means for operating the spooling mechanism independently of the other parts of the machine, substantially as set forth.

4. The combination, with the frame, a shaft journaled therein, and a master-wheel on said shaft, of a reel, a swinging arm connected therewith for operating the reel intermittingly, an oscillating arm pivotally connected with the frame, a rod connecting one end of this arm, and a pitman loosely connecting the opposite end of this arm with the shaft, substantially as set forth.

5. The combination, with the frame, a shaft journaled therein, a master-wheel on one end of this shaft, and a crank with an anti-friction roller on the other end, of a reel, a swinging arm having connection therewith, an oscillating arm, a rod connecting one end of this oscillating arm with the swinging arm, and a forked pitman connecting the opposite end of the arm loosely with the crank, a movable block in the forked end of this pitman for varying the opening in the pitman, and a pin for holding the block in place, substantially as set forth.

6. The combination, with a series of anvils, trip-hammers, a rocking shaft having arms which support the hammers, and a crank-arm on said shaft, of a main rotary shaft, a cam thereon, a lever pivoted to the frame and having an anti-friction roller thereon operated upon by the cam, and a rod connecting said lever with the crank-arm of the rocking shaft, substantially as set forth.

7. The combination, with a rotary shaft and cam mechanism, of a rocking finger-shaft, fingers thereon for driving the slats in position and holding them while the wires are being twisted, a crank-arm on the shaft, a swinging rod loosely supported on the frame and connected at one end to the crank-arm, said swinging rod having an anti-friction roller on its free end in position to be operated upon by the cam mechanism on the shaft, and means for forcing said rod toward the cam, substantially as set forth.

8. The combination, with a rotary shaft and cam thereon, of a spring-actuated finger-shaft having fingers thereon for driving the slats in position and holding them while the wires are being twisted, a crank-arm on the shaft, a swinging rod supported on a swinging arm on the frame and pivotally connected at one end with the crank-arm on the rocking shaft, an anti-friction roller on the other end of the swinging rod in position to be operated upon by the cam on the main shaft to periodically withdraw the fingers from the slats as they are being fastened between the wires, and means for forcing said rod toward the cam, substantially as set forth.

9. In a fence-making machine, the combination, with a frame, wire-twisters, a reel, and a master-wheel for communicating motion to the several parts, of a series of fingers mounted on a rock-shaft and mechanism for rocking said shaft and turning the fingers up against a slat for supporting the latter while the wires are being twisted behind said slat, substantially as set forth.

10. The combination, with a series of wire-twisters mounted on shafts, bevel-pinions on said shafts, and a drive-shaft having bevel-pinions thereon meshed with the pinions on the shafts of the wire-twisters, of a main drive-shaft, a master-wheel having teeth part way around, a pinion meshed with said teeth, a sprocket-wheel connected with the pinion and one connected with the shaft which drives the wire-twisters, and a chain or belt for communicating motion from one sprocket-wheel to the other, substantially as set forth.

11. The combination, with a series of wire-twisters mounted on vertical shafts, bevel-pinions on the lower ends of the vertical shafts, a horizontal shaft having bevel-pinions thereon meshed with the bevel-pinions on the twister-shafts for driving the latter, and a sprocket-wheel on one end of the horizontal shaft, of a main rotary shaft, a master-wheel having internal cogs formed part way around inside the rim of the wheel, a small shaft having a pinion meshed with the internal teeth, said pinion having a stop thereon, a sprocket-wheel on this shaft, and a chain passing from this sprocket-wheel to the one on the shaft which rotates the twisters, substantially as set forth.

12. The combination, with a rotary shaft, a master-wheel thereon having external and internal cogs, the latter half around the rim, of a shaft having a pinion thereon meshed with the external teeth of the master-wheel, a drive-pulley, twisting mechanism, and means for throwing the twisting mechanism in and out of gear, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

MICHAEL GLEASON.

Witnesses:
CHARLES GREENE,
C. W. SMITH.