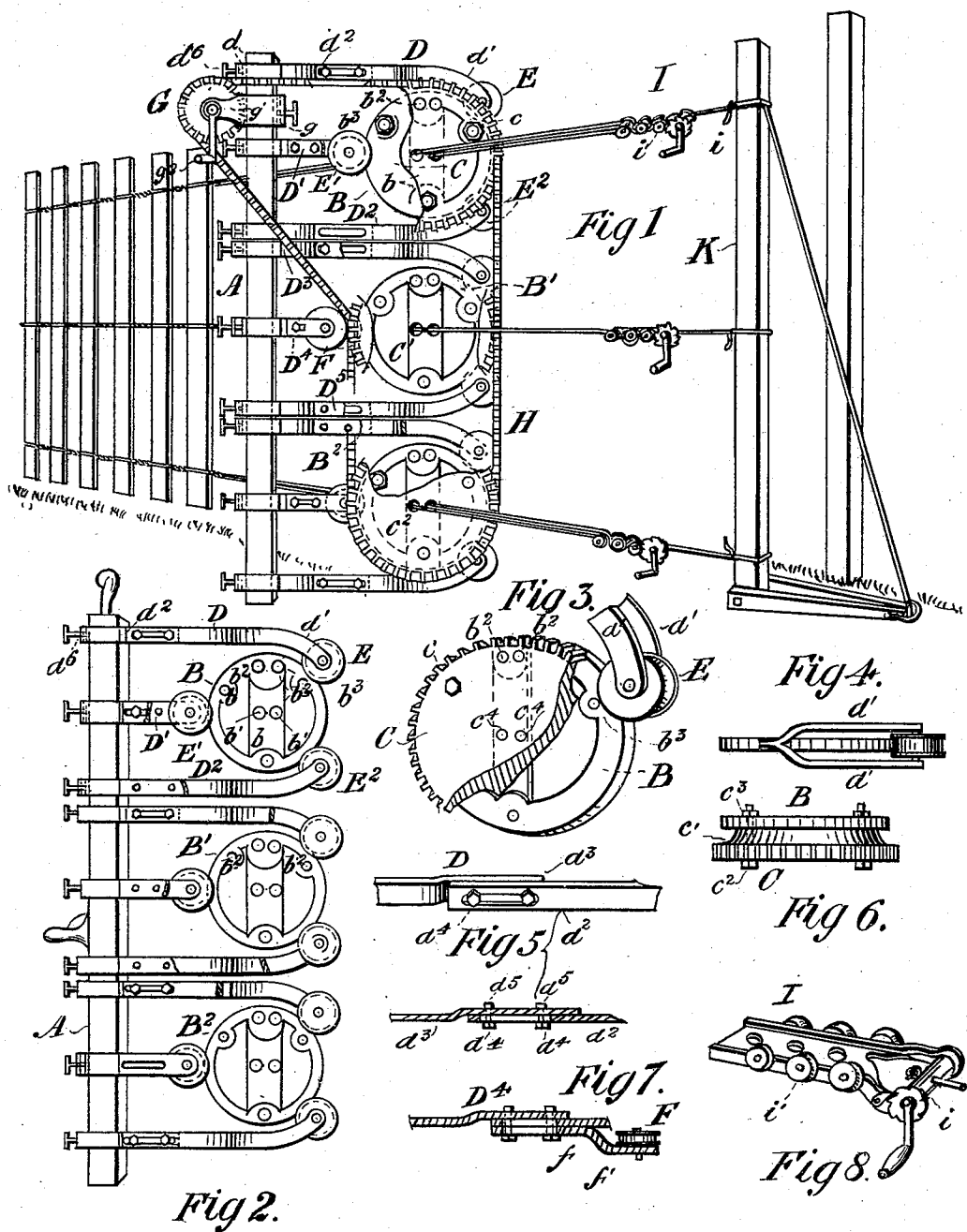


(No Model.)

M. CAHILL.
WIRE FENCE MACHINE.

No. 578,284.

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WIRE-FENCE MACHINE.

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To all whom it may concern:

Be it known that I, MORTIMER CAHILL, a citizen of the United States, residing at Lawrence, in the county of Douglas and State of Kansas, have invented certain new and useful Improvements in Wire-Fence Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

My invention has for its object, first, to reduce the friction of the revoluble wire-twister upon its track to the minimum; second, to enlarge or contract the dimensions of the track for separate revoluble wire-twisters varying in size and position; third, to regulate the distance between the respective wire-twisters in series upon the carrying-frame.

My invention consists in the novel construction and combination of parts, such as will be fully described, and specifically pointed out in the claims.

In the drawings, Figure 1 is a view in perspective of the improved fence-machine, showing the fence and fence-wires with a portion of the sprocket-toothed disk broken away to show the wire-twister, the tension device and swivel, and the machine in position for operation. Fig. 2 is a side view of the fence-machine with the sprocket-toothed disk and sprocket-chains removed. Fig. 3 is a detail view in perspective of one of the combined wire-twisters and sprocket-disks, showing a broken portion of the upper guide-arm and the guide-roller, a portion of the sprocket-wheel being broken away to show the wire-twister and the annular extension in the sprocket-disk. Fig. 4 is a detail view of the forked end of one of the guide-arms. Fig. 5 is a detail side and plan view of the adjustable portions of one of the guide-arms. Fig. 6 is a detail plan view of the combined wire-twister and sprocket-toothed disk. Fig. 7 is a detail plan view of one of the guide-arms and the plate connected therewith carrying the guide-roller and retaining the sprocket-chain in engagement with the sprocket-toothed disk. Fig. 8 is a view in perspective of the tension device.

Similar letters of reference indicate corresponding parts in all the figures.

Referring to the drawings, A represents a vertical standard of a suitable height which supports in the manner hereinafter described the respective wire-twisters B B' B² in vertical series.

The wire-twister B consists of a revoluble ring, both sides of which are flat. To the inner edge portion of ring B and at one side of said ring is rigidly attached one end of a flat plate *b*, the other end of which plate extends in the line of the diameter of said ring and is rigidly attached to its inner edge upon the other side. In plate *b*, on each side of a central point of the ring equidistant from its periphery, is a perforation *b'* for the separate wires to be twisted. In said plate, near its point of connection with the ring B, are apertures *b² b²* for the wires when the machine is employed as hereinafter described.

b³ b³ are perforated lugs on the inner edge of ring B. Upon one side of the ring B is a circular flat plate or disk C, upon the periphery of which are sprocket-teeth *c*. On the inner side of the disk C and connected with the inner edge of the ring B is an annular extension *c'*, which abuts against the plate *b* and lugs *b³* and retains the disk at a described distance from the periphery of the ring B. Said disk C is removably connected with the ring B by means of the threaded bolts *c²*, which extend through the said disk and the lugs *b²* on ring B, and to which bolts are fitted the nuts *c³*.

In disk C directly opposite the perforations *b' b'* in the plate *b* of ring B are perforations *c⁴ c⁴*. The annular wire-twister B is revoluble between and held in position by guide-rollers supported by arms which extend in the direction of and tangentially to the twister, as hereinafter described. Upon the upper end portion of the standard A is a sleeve or collar *d* in conformation to the sides of said standard.

To one side of sleeve *d* is attached rigidly one end of an arm D, which extends a considerable distance from and at right angles to said standard. The outer end of said arm is forked at *d' d'* and the said forked ends bent downwardly in a curved line. In the forked ends of said arm D is journaled a

small grooved roller E. Said arm D, between the sleeve d and the forked end d' , is in two separate longitudinally-slotted parts d^2 d^3 , one part overlapping the other. Said parts are secured adjustably together by means of the adjusting-bolts d^4 and nuts d^5 . In the collar d and in the other side from that having arm D is an adjusting-screw d^6 , which impinges upon the adjacent side of the standard A, and by means of which the collar is adjusted in position. Beneath the adjustable arm D is an arm D', which is also provided with a collar fitted adjustably to the standard in precisely the same manner as the collar d . The arm D' is short in length compared with arm D, and extends horizontally in a direct line from the corresponding side of said standard and is also provided with separate adjustable parts, as described of the arm D. In the outer end of the arm D', which is forked, is journaled a grooved guide-roller E'.

To the corresponding side of standard A, from which are extended the arms D D', is adjustably connected an arm D², which is constructed precisely the same as the arm D and secured to the standard in like manner. The outer forked ends of the arm D² are reversed from the position of arm D and the curved forked ends extended upwardly, and in said ends is journaled a grooved guide-roller E², the position of said roller being directly beneath roller E. The periphery of the ring B is placed in the groove of each one of the guide-rollers E E' E², the arm D' being first adjusted so as to widen the space between the roller E' and rollers E E² and admit the ring B, after which the arm is again adjusted and the roller E caused to receive the periphery of the ring B. The position of each guide-roller therefore is such as to permit of rapid rotation of ring B without liability of binding or causing friction. Beneath the combined disk C and wire-twister B is a combined disk and wire-twister C' B', which is constructed in precisely the same manner as the combined disk C and wire-twister B and is supported in position and revoluble in grooved guide-rollers, which are journaled in adjustable arms D³ D⁴ D⁵, constructed and arranged in precisely the same manner as the respective arms D D' D² and extending in a like direction and from a corresponding side of standard A. Beneath the combined disk and wire-twister ring B' is shown a separately-mounted wire-twister B², the construction and arrangement of which and its support being precisely the same as described of the other wire-twisters.

For the purpose of operating each wire-twister B B' B² simultaneously and with a short leverage a bar f , having a longitudinal slot at one end, is secured to the side of the adjustable arm D⁴, supporting the wire-twister B' by means of the adjusting-bolts securing the separate parts of said arm together. The outer end of the said bar f is bent outwardly at f' at an angle to the rear end in a slight degree, as seen in Fig. 7, and thence extended

a short distance in a direct line, upon the inner side portion of which is journaled a small guide-roller F, the periphery of which approaches within a slight distance of the sprocket-teeth of the disk C'.

Upon the upper end of standard A, between the respective collars to which the arms D D' are attached, is adjustably connected a collar g , and to the side of said collar is attached a bracket g' , which extends in an opposite direction from standard A to that described by the arms D D' D², and to the side of said bracket is journaled a small sprocket-wheel G, to the axis of which wheel is attached a crank g^2 . Over the periphery of disk C is extended one end of a sprocket-chain H, the other end of which chain is extended downwardly, engaging with the sprocket-teeth in the disk C', and thence over the lower disk C², thence upwardly between the guide-roller F and engaging with the sprocket-teeth on the disk C', thence guided by the wheel F to and over the small sprocket-wheel G, and the two ends of the sprocket-chain are connected together in the usual manner.

In operation the separate strands of fence-wire composing the upper fence-cable are attached to a suitable fixed post at one end. The improved fence-machine is placed in an upright position, and the other ends of the separate wires extended through the respective perforations $b' b'$ in plate b of the ring B, and also through the perforations $c^4 c^4$ of disk C. The ends of the wires are then connected with a tension device I of well-known construction, which may be provided with a swivel, the swivel being secured by a piece of wire to the upper end of a fixed post K. The tension device is then operated to draw upon the fence-wires, so as to take up the slack and retain them horizontally in position. The fence-wires composing the lower and intermediate cables are then stretched in like manner and extended through the respective wire-twisters B' B² and by means of tension devices applied in the same manner as described of the upper separate fence-wires. The operator places a fence-picket between the separate strands of all the fence-wires and in a vertical position, the standard A being supported by hand or in any other manner preferred. The crank g^2 is operated and power transmitted through the sprocket-chain to each one of the wire-twisters B B' B², and the separate wires in advance of the picket are twisted upon each other a certain distance. Another picket is then inserted between the separate wires against the former twisted portion of the wires. The twisters B B' B² are then rotated a suitable number of times and the wires twisted in advance of the picket as before, securely holding the picket in place. The operation is then repeated. At each rotation of the wire-twister the swivel i permits the fence-wires on the tension device to change position in a direction contrary to the twisting movement of the wire-twister.

It will readily be seen that the twister-ring B may be removed from the guide-rollers and the arms D D' D² adjusted so as to draw the guide-rollers nearer each other in position, so as to receive a twister-ring smaller in size. In this adjustment the adjusting-screws *d*⁶ of the upper and lower collars *d* are turned so as to adjust the arms closer together and the smaller twister-wheel inserted in the respective guide-rollers. In wire-twisting machines a number of small twistors may be employed and the separate cables of twisted wires thus brought closer together.

In Fig. 2 I have shown the wire-twisting machine with the sprocket-chain and sprocket-toothed disks removed and a longer leverage obtained in operating the twisting devices. In this modified form of machine the separate fence-wires are passed through the perforations *b*² *b*³ in plate *b* of the ring B and the tension applied in the same manner as described of the machine as in Fig. 1. The other fence-wires are passed through perforations *b*² in the same part of the plate in the other wire-twisters B' and B² as described of wire-twister B. The operator in this form of the invention raises the standard A with the hands and moves it bodily and describes with said standard a curvilinear movement in the direction of the fence-wires. This movement actuates the respective rings B B' B², and obtaining a longer leverage on the rings the rings each revolve, twisting the fence-wires, as described in the employment of the sprocket-toothed disk and the sprocket-chain, and accomplishing the twisting of the fence-wires with equal facility.

If preferred, the wire-twisting rings B B' B² may have a grooved periphery and the rollers E E' E² fitted thereto without departing from my invention.

For the purpose of making more uniform the feed of the fence-wires through the tension device I and to prevent the removal of galvanized surface by friction as the wires

are fed through in a shortening process occasioned by the twisted fence-wires on the side of the tension device, in the path of the fence-wires are attached antifriction-rollers *i*' in series. Over and under each of said rollers in succession the wires are held and fed between, as the twisting of the wires decreases their length.

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

1. In a wire-twisting machine, an annular wire-twister, and a guide-frame composed of a standard and laterally-extended arms, said arms having separate adjustably-connected parts extending in the direction of and also tangentially to the periphery of said twister, and having inwardly-bent outer forked ends and antifriction guide-rollers in said forked ends, and also adjustably connected with said standards as and for the purpose described.

2. In a wire-twisting machine, an annular wire-twister, and a guide-frame composed of a standard and laterally-extended arms, said arms extending in the direction of and also tangentially to the periphery of said wire-twister, and having inwardly-bent outer ends and antifriction-rollers in said ends, said arms having separate adjustably-connected parts, as and for the purpose described.

3. In a wire-twisting machine, an annular wire-twisting plate, having apertures for the separate wires, a standard and laterally-extended arms extending in the direction of and tangentially to the periphery of said wire-twisting plate, and having inwardly-curved outer forked ends, and separate adjustably-connected parts, and grooved guide-rollers in said outer forked ends of said arms, for the purpose specified.

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