(No Model.) 4 Sheets—Sheet 1.

B. L. FLETCHER.

MACHINE FOR MAKING FENCES.

No. 301,878. Patented July 15, 1884.

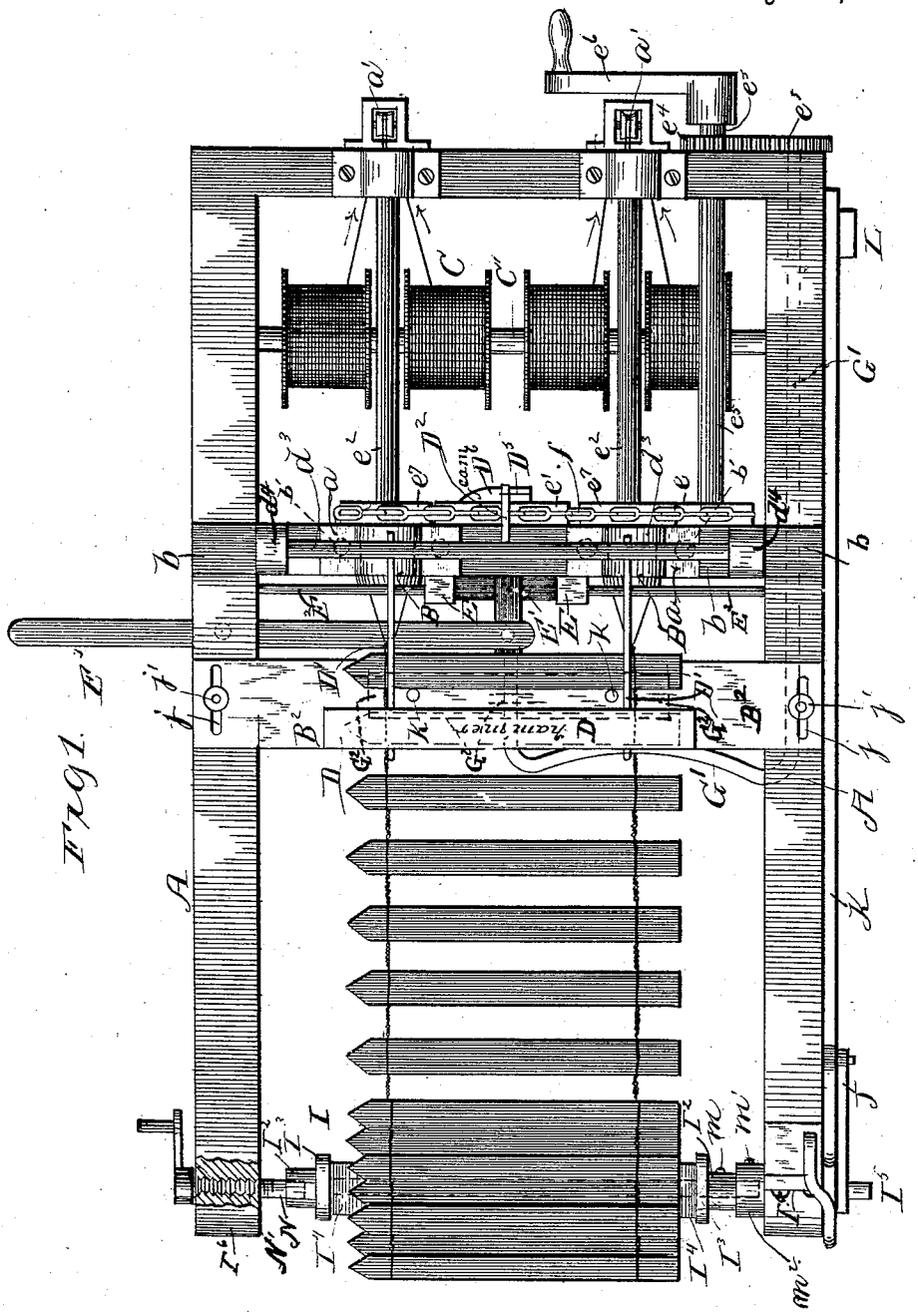

Fig 1.

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Fig 2

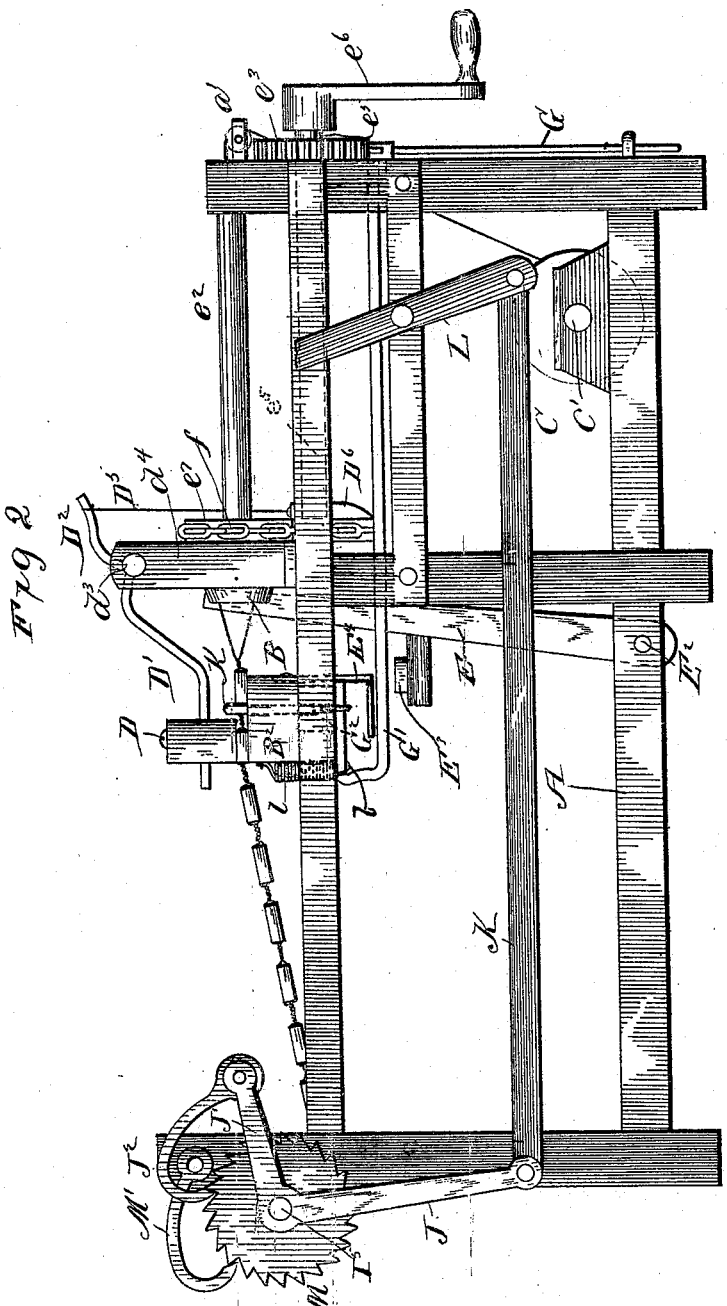

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Fig. 3.

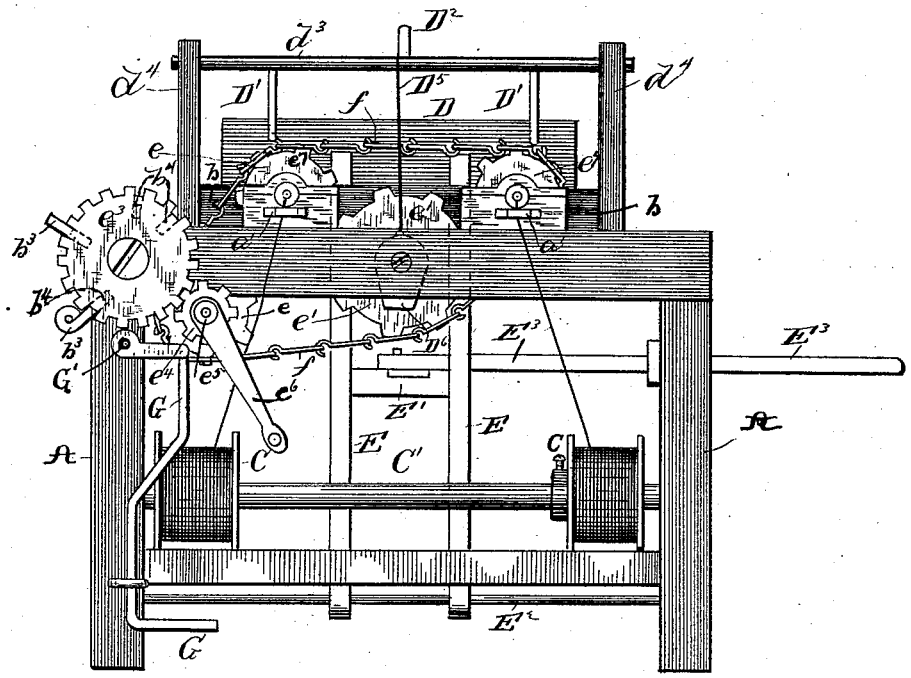

Fig 7

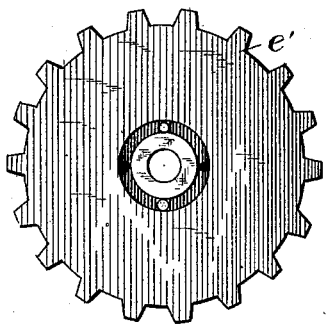

Fig. 8.

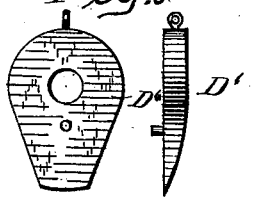

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Fig 4

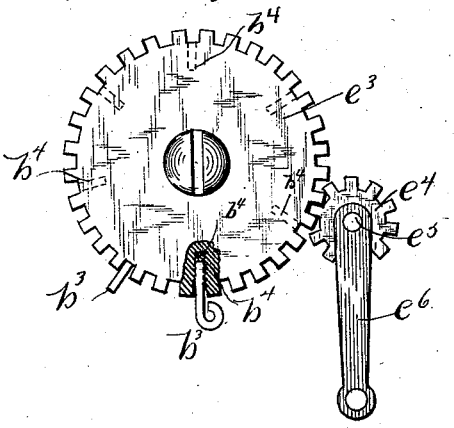


Fig 5

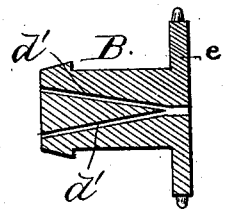
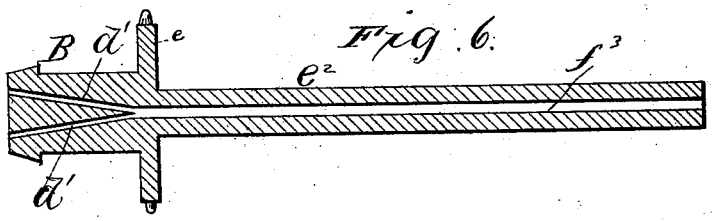


Fig. 6.



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UNITED STATES PATENT OFFICE.

BENJAMIN L. FLETCHER, OF WICHITA, KANSAS, ASSIGNOR OF ONE-HALF TO JOHN M. DUNKIN, OF SAME PLACE.

MACHINE FOR MAKING FENCES.

SPECIFICATION forming part of Letters Patent No. 301,878, dated July 15, 1884.

Application filed March 27, 1884. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN L. FLETCHER, a citizen of the United States of America, residing at Wichita, in the county of Sedgwick and State of Kansas, have invented certain new and useful Improvements in Machines for Making Fences, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention pertains to machines for making fences, being specially designed to weave pickets, panels, or slats on the stringers or suspending-wires in the construction of the fence; and it consists in the sundry combinations of parts and their construction, substantially as hereinafter fully set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of my machine. Fig. 2 is a side elevation thereof. Fig. 3 is an end elevation of the same. Fig. 4 is a detailed rear side view of the twisting-cylinder-shaft-operating gearing and crank, and Figs. 5, 6, 7, and 8 are detail views of my machine.

In carrying out my invention I provide a suitable supporting-frame, A, upon which is mounted, a suitable distance from one end thereof, the twisting devices or cylinders B, bearing in boxes *a*, in practice secured adjustably by set-screws upon a cross-piece, *b*, designed to have a longitudinal slot to permit of the disposition of the twisting devices or cylinders nearer together or farther apart, according to the length of the pickets, panels, or slats, as more clearly shown in concurrent application filed March 7, 1884, Serial No. 123,302. These cylinders or devices are each provided with two oblique apertures, *d'*, extending through the same, and with shafts e^2, having a continuous central passage, f^3, extending through it and uniting with the passages *d'* at their confluence for the passage of two strands or wires. At one end of each of the twisting cylinders or devices and its shaft is secured a rag or sprocket wheel, e^7, said wheel being fastened to both the cylinder and shaft, and which wheels are encompassed by a chain belt, *f*, also encompassing and driving (for the purpose hereinafter explained) a similar larger wheel, *e'*, journaled intermediately between said wheels *e'* and e^7 in bearings secured to frame A. The coils of wire are carried upon the drums C C, located upon the transverse shaft C' arranged below said twisting-cylinder shafts, two strands of the wire passing from each drum over a frictional pulley, *a'*, with its support secured to the rear cross-bar of frame A, thence to and through the passages of each of the shafts of the twisting cylinders or devices.

The twisting devices or cylinders B are provided with the inclined convergent passages *d' d'*, as shown in Figs. 5 and 6, by the passage of the wire through which the wire, being deflected out of the plane of its travel, will to the greatest possible extent be deprived of previous kinks, and consequently be prevented from kinking as it is intertwisted in connecting it to the panels, pickets, or slats. These shafts e^2 of each twisting-cylinder B may be integral with the latter. The shaft e^5 has rigidly secured thereto a pinion, e^4, gearing with a larger pinion, e^3, which, in connection with the crank e^6, are designed for imparting a limited rotary motion to the rag or sprocket wheel *e*, and also to sprocket-wheels e^7, by means of the chain-belt *f*, the sprocket-wheels e^7 being severally cast integral with the twisting devices or cylinders B. The large pinion or gear wheel e^3 has two peripheral stops, b^3, one being fixed and the other being movable, to limit the turning of the crank-shaft, operating said wheel, to allow of the transmission to the twisting-device shafts of only the required partial rotaion, either to the right or left hand, as practiced in operating said devices to effect the twisting of the wires in the required direction and to the required extent in connecting the same to the pickets or panels. The movable stop b^3 is capable of adjustment by movement by the hand to any one of the number of sockets b^4 disposed at intervals along the periphery of the wheel e^3 below its teeth, whereby the amount of twist to be imparted to the wires may be varied or regulated according to the size of the intervals or spaces to be left between the panels, pickets, or slats being attached or strung on the wires or stringers.

D is a hammer, which consists of a heavy

transverse bar arranged over the table B^2, and connected near its ends to the outer or forward ends of arms D', secured at their rear ends to a fulcrum or shaft, d^3, pivoted in uprights d^4, fastened to the frame A, said fulcrum or shaft being arranged on a higher plane than the hammer D, and provided with a rearwardly-projecting central arm, D^2, connected by a band or flexible connection, D^5, to a cam, D^6, secured to the rear side of the sprocket-wheel e', said cam being so disposed that it will, synchronously with the winding of a portion of said band thereon, (presently more fully described,) elevate the hammer just as a panel or picket that has been secured to the wire is to be passed under said hammer, and will, after the elevation of the hammer, permit the wound portion of the band to escape therefrom, when the hammer will fall and straighten out the intertwisted wire passed around the slat or picket, the hammer being thus intermittently operated for each slat during the operation of the machine. The cam D^6 is centrally connected to the wheel e' adjustably, as seen, Figs. 7 and 8, and has a semicircular portion, with its other half or portion formed with an extension or projection, whose side edges are beveled to its point of union with the wheel e', while its rear side projects beyond or about in a plane touching the same side of the semicircular portion of the cam, whereby, during a certain portion or one half of the revolution of the cam, the cord or band will be wound thereon, lifting the hammer, and when it (the cam) begins to make the other half of its revolution, the taken-up portion of the band will be tripped or caused to slip off said cam by the action of the projection of the latter, allowing the hammer to fall.

Disposed intermediately of the twisting-cylinders and the table B^2, so as to move up against the table B^2, are upright bars E, which are connected firmly together by a cross-bar, E', about midway of their lengths, and which are pivoted at their lower ends upon a rod, E^2, secured in the lower part of the frame A.

To the cross-bar E' of the pivoted bars E is pivoted a hand-lever, E^3, also pivoted upon a cross-bar of the frame A, and projecting a suitable distance at one side of the frame A, for its convenient manipulation to and from one side of the picket, which is being fastened to the stringers or wires, to effect the temporary holding of that side of the picket, the opposite side of the slat being held as against movement in that direction, as presently described. The table B^2, upon which the slat, panel, or picket is placed, is adjustably connected to the frame A, being provided with transverse slots *j*, which receive adjusting-screws *j'*, entering the frame. Through the table passes two upright stout pins, *k*, secured to a bar below the table, presently described, and adapted to bear against the forward side of the slat, that side opposite to which the bars E bear. The pins *k*, in order to permit the slat or picket to pass after having been fastened, are capable of retraction or being depressed below the upper surface of the table B^2 by means of the foot-lever G, connected to a right-angled lever, G', which may be pivoted in brackets secured to the frame A, the inner end of said latter lever being extended inwardly, upwardly, and thence forwardly at right angles to the latter bend, and connected to a bar, G^2, having the pins *k*. A spring, *l*, connected to the inwardly bent or projecting portion of the lever G', serves to automatically project or hold the pins K in a projecting position in the table. A bracket-pendant, E^4, is designed to depend from the under side of the table and have a lower horizontal portion extending a short distance below and under the bar G^2, to limit the downward movement of the latter when the pins *k* are depressed or retracted.

I is the reel upon which the fence fabric, as fast as woven, is wound, as will be explained farther on, and which in practice consists of a central shaft to be held detachably in the tubular portions or boxes I^2 of end plates or disks, I^3, by set-screws *m*, and of peripheral bars I^4, with their ends designed to be let into oblong or other apertures of the disks or plates I^3. One end of the central shaft is to be secured removably by a set-screw, *m'*, in a hub or box, m^2, formed with or fixed to a short shaft, I^5, bearing in a bracket, I^6, secured to an upright of the frame A.

To the outer end of the shaft I^5 of the reel is connected, so as to revolve with it to cause the intermittent rotation of the reel, a lever, J, connected by a rod, K, to a hand-lever, L, hung or fulcrumed at or near the opposite or feeding end of the frame or machine, within easy reach of the attendant, said lever J having an arm, J', carrying a gravity-pawl, J^2, engaging with a ratchet, M, secured upon the shaft I^5. A second gravity-pawl, M', engages said ratchet to prevent reverse movement of the reel, said pawl being hung or pivoted upon an upright of the frame A. A screw-shaft, N, screwed into a screw-threaded box or bracket, N', secured to an upright of the frame A, enters one of the boxes of the plates or disks I^3, and forms a bearing therefor. This shaft is to be operated by a handle to enable the convenient unscrewing or withdrawal of said shaft from the reel end or plate I^3, when it is desired to remove the reel, which becomes necessary when its holding capacity has been taken up by the completed section or portion of the fence fabric, the wires, previous to the removal of the reel, having of course been severed from the other portion of the fabric. After the removal of the reel, with its contents, from the machine, which is accomplished by simply unscrewing the shaft N and the screw *m'* and lowering the reel from its position, by the hands, to the floor or ground, one or both of the end plates, I^3, is removed by withdrawing its holding-screw *m*, when the remainder

of the reel can be readily released, leaving the reeled or rolled up fabric in condition to be conveniently and expeditiously stowed away or shipped. The parts of the reel are now reunited by simply slipping or reinserting the detached ends of the peripheral bars into the removed end plate, and replacing, fastening said end plate to the central shaft, after which the reel is bodily placed again in position upon the machine by first introducing one end of its shaft into the box or bearing m^2 and then holding it in alignment with the screw-shaft N while revolving the latter, until it has been properly screwed into the box of that end plate of the reel, when the reel will be secured in place.

In operation the wires, after the passage of two from each of the drums and through the longitudinal passages f^3 of the shafts e^2, and thence to and through the oblique passages or apertures d' of the twisting devices B, are extended, untwisted, to and secured to the reel I, when the operator begins the placing of the pickets, panels, or slats, one at a time, upon the table between the wires. He then suitably adjusts the pivoted bars E against one side of the slat, picket, or panel, the latter resting at its opposite side against the pins k, and by turning the crank or handle e^6 first to the right as far as the stops on the wheel e^3 will allow, when the required twist will then be imparted to the wires, and the binding of the same around the slat, picket, or panel will be effected. The operator then depresses the pins k below the upper surface of the table by means of the foot-lever G, and by operating the hand-lever L causes the reel I to revolve, and the fence fabric is then carried forward so as to cause the slat, picket, or panel just woven to come directly under the hammer D, which has been raised in an elevated position by means of the flexible connection D^5 wound upon the cam D^6, secured to the rear side of the sprocket-wheel e', said wheel e' having been operated by means of the chain belt f, as above described. The hammer D will then fall and straighten out the intertwisted wire passed around the slat or picket. The operator again places another slat, picket, or panel upon the table between the wires, and then turning the crank or handle e^6 in the reverse direction—*i. e.*, to the left, said movement also being limited by the stops on the wheel e^4—the required reverse twist will be imparted to the wires, and the binding of the same around the slat, panel, or picket be effected, the weaving of the fence fabric being thus accomplished. As fast as the picket, panel, or slat is secured to the wires, the same, with the wires, is fed forward, and as the same accumulates they are wound upon the reel by operating the hand-lever L, the aforesaid operation being continued until the required amount of fabric has been woven.

I do not claim herein anything of my invention in the means for moving, holding, and releasing the picket, or in the reel, these matters being the subject of my concurrent application No. 123,302.

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

1. The twisting devices, with their shafts provided with sprocket-wheels actuated by a chain belt driving a third similar wheel carrying a cam connected by a flexible connection to the hammer appliance for straightening the intertwisted wire looped around the slats, pickets, or panels, just after the completion of the twisting operation, substantially as described.

2. The combination of the shafts e^2, having longitudinal passages f^3 and cast integral therewith, twisting devices B, having convergent apertures d', and the driving-shaft, carrying a pinion gearing with a larger pinion provided with stops, substantially as shown, and for the purpose described.

3. In a fence-making machine, the hammer appliance actuated by a cam carried by a wheel operated by a chain belt gearing with the driving-shaft, substantially as shown, and for the purpose described.

4. In a fence-making machine, the combination, with the hammer appliance, of the cam carried by the wheel actuated by the chain belt engaging with the twisting cylinders, said cam having a semicircular portion and a projection, and connected by a flexible connection to the hammer of said appliance, substantially as shown, and for the purpose set forth.

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

BENJAMIN L. FLETCHER.

Witnesses:

J. NOTA MCGILL,

H. N. HALL.