

(No Model.)

3 Sheets—Sheet 1.

R. B. STAPP.

MACHINE FOR MANUFACTURING FENCE.

No. 335,253.

Patented Feb. 2, 1886.

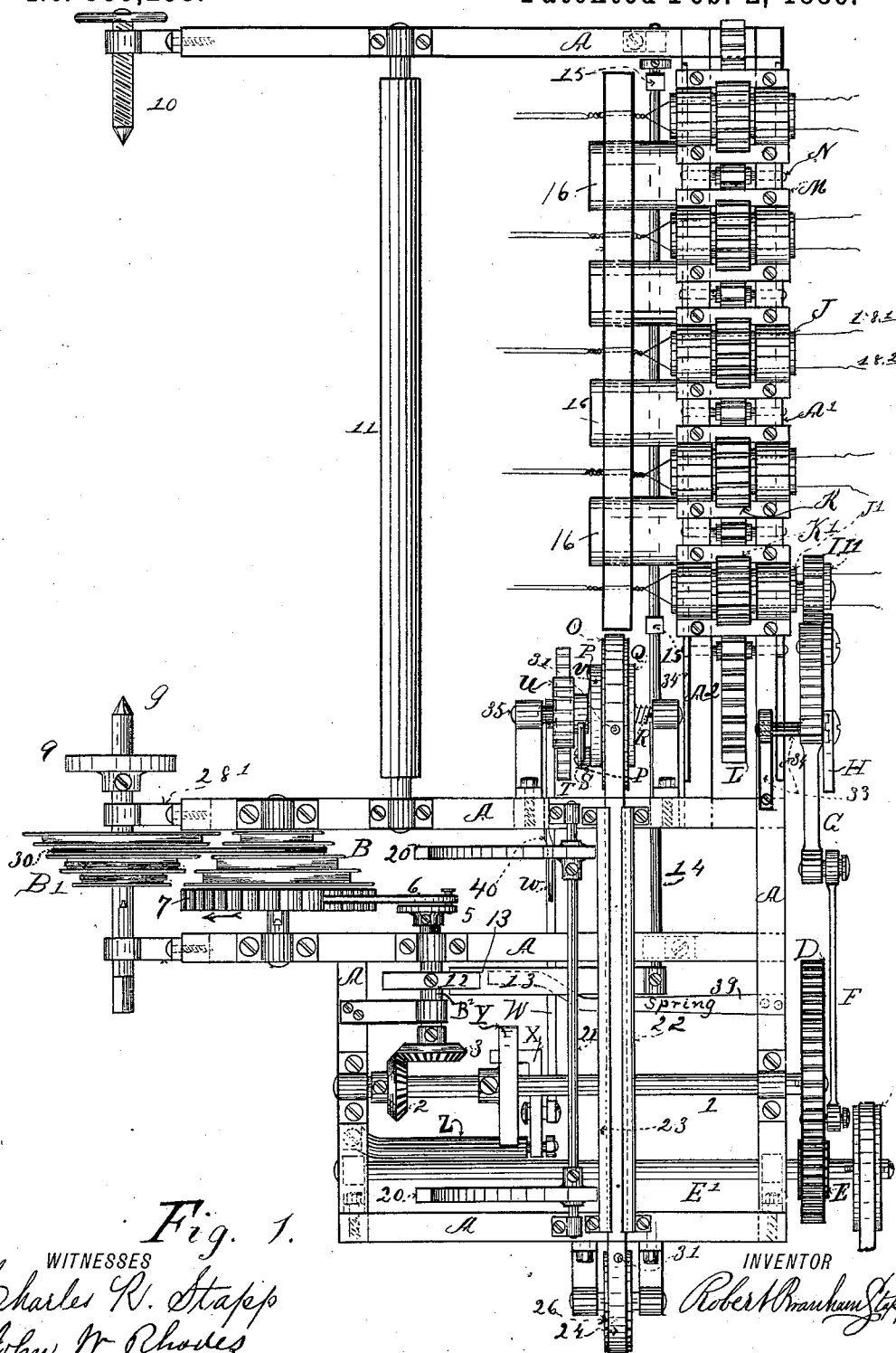


Fig. 1.

WITNESSES

Charles R. Stapp
John W. Rhodes

INVENTOR

Robert Brauchman Stapp

(No Model.)

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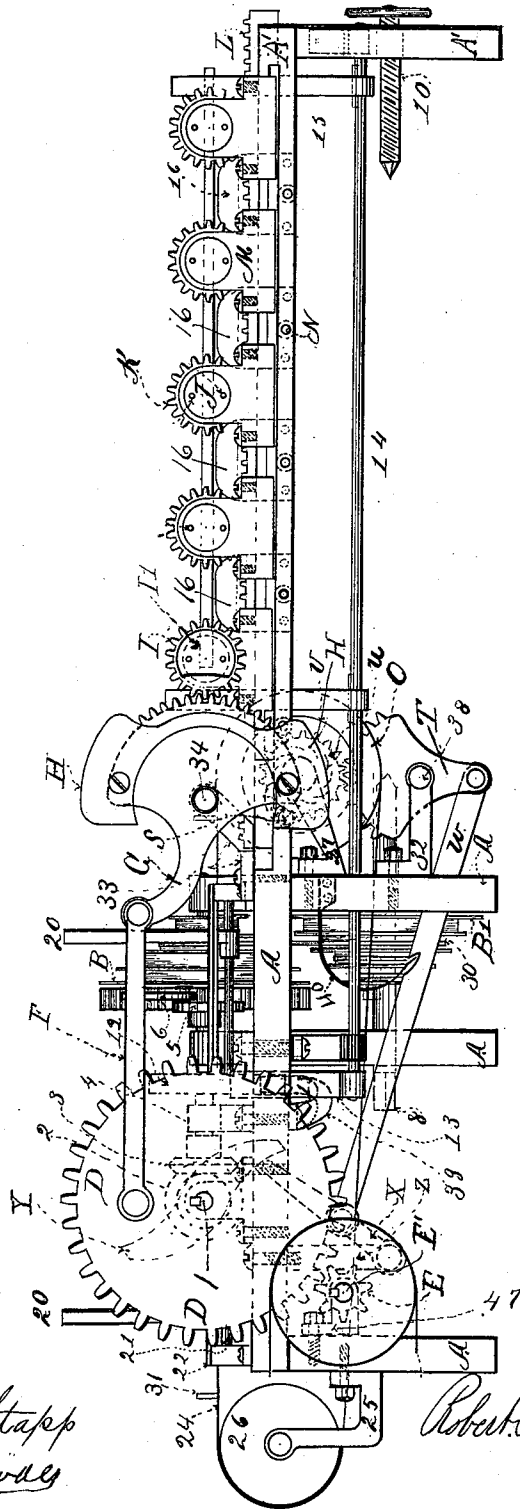
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Fig 2.



WITNESSES

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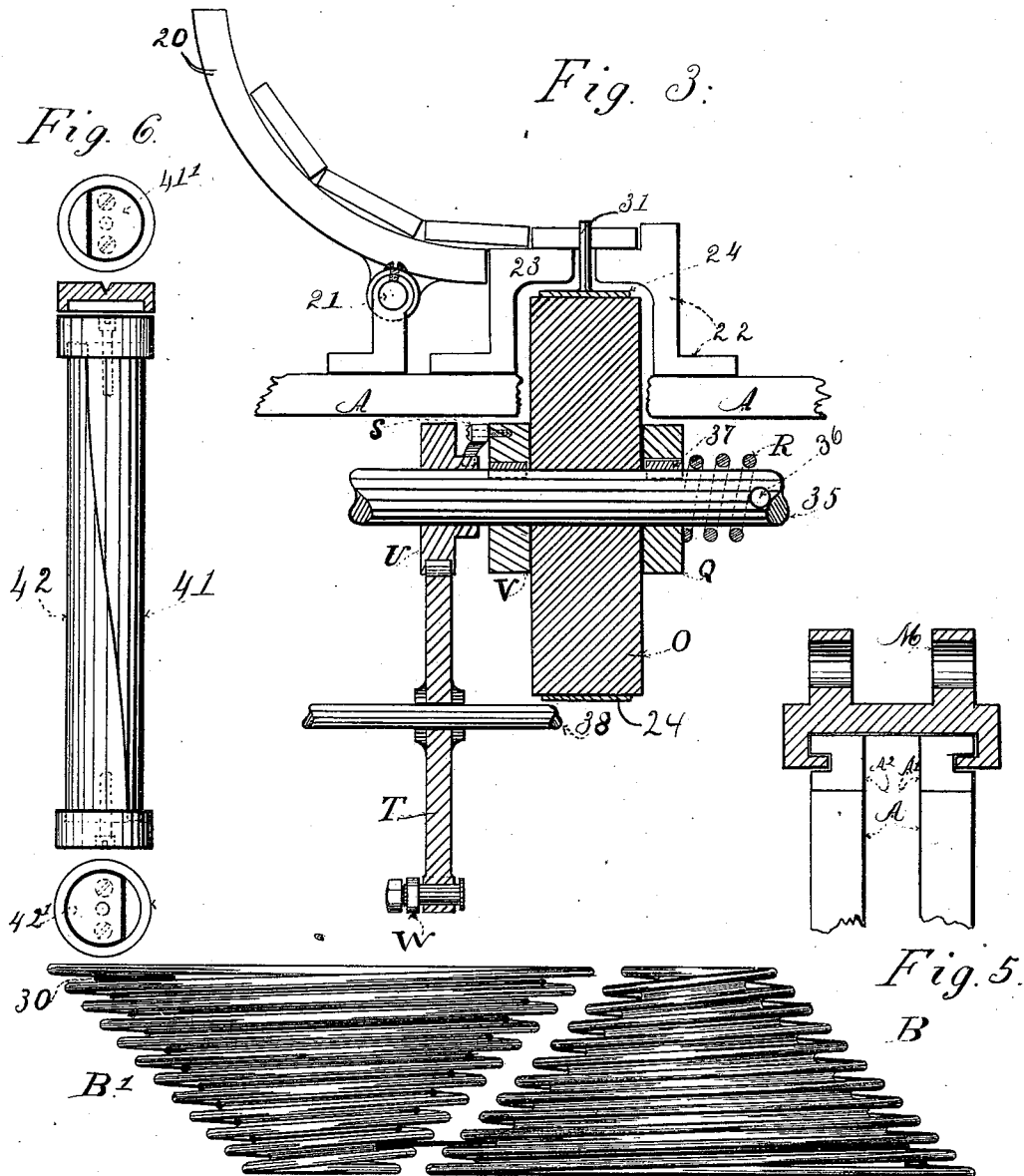
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Fig. 4

INVENTOR
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UNITED STATES PATENT OFFICE.

ROBERT B. STAPP, OF DENVER, COLORADO.

MACHINE FOR MANUFACTURING FENCES.

SPECIFICATION forming part of Letters Patent No. 335,253, dated February 2, 1886.

Application filed July 17, 1885. Serial No. 171,873. (No model.)

To all whom it may concern:

Be it known that I, ROBERT B. STAPP, of Denver, in the county of Arapahoe and State of Colorado, have invented a new and useful
5 Improvement in Machines for Manufacturing Fences; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates to fence-making machines of that class in which wooden pickets are secured by strands of wire, the strands being twisted together upon each side of the pickets, thus holding them in place.

My invention consists in the devices and
15 combination of devices hereinafter fully described, and particularly pointed out in the claims.

My invention is illustrated in the accompanying drawings, in which Figure 1 represents a plan of my invention. Fig. 2 represents a front elevation of the same. Fig. 3 is an elevation, with a portion in section, of mechanism for feeding the pickets. Fig. 4 is a detail view of the mechanism for winding
20 the fencing. Fig. 5 represents a sectional end view of the adjustable twister-frame. Fig. 6 is a detail view of the drum on which the fence is wound.

In these drawings the frame of the machine
30 is represented at A. It is arranged substantially as shown, in order to support the various mechanisms which go to make up the organization of the machine. The mechanism is driven from a main shaft, E', which has its
35 bearings in the side beams of the frame proper, extending all the way across. A band-wheel is attached to the end of this shaft, to which power can be applied from any suitable source. A shaft, 1, runs parallel to this first shaft, and
40 is driven from a pinion, E, meshing in a gear-wheel, D, on the shaft 1. From a pin set eccentrically in the face of the gear-wheel D a pitman, F, extends, being loosely connected at the other end with the rear extension of a segmental gear, G, through which the twisters
45 are operated. The twisting mechanism is supported on horizontal pieces A' A' of the frame, arranged parallel to each other a proper distance apart. The twisters themselves consist of cylinders having perforations at top
50 and bottom of the cylinder, or, in other words, opposite each other near the periphery, these

openings being for the passage of the wires, which are brought from suitable spools arranged on a rack in a well-known manner. 55 These cylinders have bearings in sliding boxes M. (Shown clearly in Fig. 5.) These boxes have bearings for the ends of the cylinder with an open space in the center. The edges of the pieces A' A' have grooves in them, into which 60 are fitted projections on the boxes M, and by means of this construction the boxes and twisters may be adjusted upon their supporting-frames, or removed entirely, when desired. When in proper position, the boxes are held 65 by set-screws, as shown in Figs. 1 and 2. A pinion, K, is fixed to each twister at its central portion, so as to rotate in the space in the boxes M. A rack-bar, L, has bearings upon rollers in the frame, said rollers extending between the parallel bars, the rack L being so 70 located thereon as to be directly beneath the pinions on the twisters and to mesh therewith.

The object of the rack is obvious. Motion is 75 transmitted from the segmental rack to a pinion, I, on the end of the first twister, J', and this twister, through its central pinion, moves the rack L and the rack moves the rest of the twisters. Any number of twisters may be 80 used, according to the number of strands required in the fence. The twister J' extends beyond the line of the other twisters, and is provided with the gear I on the end, this gear meshing with the segment-gear G. This gear 85 is loose on the shaft 34. It has a sufficient number of teeth upon its periphery to revolve the pinion I, and consequently the other pinions and twisters, through the rack L, twice. After such revolution of the twisters it is 90 necessary to hold them from turning while another picket is fed into position, and for this purpose I provide the following means: Plates H H, connected by a narrow strip, are secured to the gear G, concentric with the center and projecting beyond the outer edge 95 thereof, above and below, the connecting-strip being within the line of the teeth, so as not to interfere with the action thereof. From the point where the plates H project the teeth 100 terminate, so that as the segment is moved to rotate the pinions further movement of the segment after the teeth have left the pinion brings the edge of the plate H in contact with

the projection I' on the pinion I, the side of this projection being cut away on a curve corresponding to the curve of the plate H, and, consequently, when this plate bears against the cut-away portion, the twister is held stationary and prevented from moving.

Tables or supporting-brackets for the pickets, marked 16, and secured to the beam A', have rounded faces to prevent friction or interference in any way with the ready removal of the pickets.

The pickets are fed to the twisters by the following mechanism: Curved brackets 20 are supported adjustably upon a rod, 21, and these brackets serve to hold the slats and to feed them down continuously to the belt 24, which carries them to the twisters. The slats are fed down by the weight of those behind. Upon one side of the frame proper a pulley, 26, is supported in suitable brackets, and at the other side a pulley, O, is supported upon a shaft, 35, being loose thereon. A band, 24, passes over these pulleys, being driven intermittently thereby, as hereinafter described. Pins 31 are set in this band at suitable distances apart, always a greater distance than the length of a picket. The band is covered for the most part in its path across the frame of the machine, a central opening being left for the passage of the pins 31. This covering consists of guides 23 22. The guide 23, being upon the left of the band and being level with the lower part of the curved brackets, makes a continuation of the same, whereby the pickets are fed to the carrying devices. The guide 22 completes this table on the right of the band, and terminates in a shoulder, 32, which serves as a stop to limit the movement of the picket. As a picket is fed into position upon the moving band, as soon as one of the pins 31 moves around the pulley 26 it comes into contact with the end of the picket and moves it along, depositing it upon the tables or brackets 16, between the wires, and in the operation of the machine it is woven in the fence in the ordinary manner.

I have provided the following means for operating the moving carrier-band: On the shaft 1, toward the rear, is a cam, Y, which, in the revolution of the shaft, operates upon the end of an arm, X, which is pivoted upon a projecting spindle from the shaft Z. A pin projects from the face of this arm X, and a pitman, W, extends from this pin to the lower end of a segment-gear, T, pivoted upon a shaft, 38, as shown in Figs. 2 and 3. The movement of the shaft 1 causes the cam Y to revolve and act upon the end of the arm X, which draws upon the pitman-rod to move the segment-gear upon its shaft. The pitman and the arm X are returned to their normal positions by the spring 40, which bears in a recess in the said pitman-rod. The segment meshes with a pinion, U, loose on the shaft 35, arranged above the shaft 38. Upon this shaft the band-wheel O is supported loosely. Between the wheel or pulley O and the pinion U is a disk, V, keyed to the shaft and having

a pawl, S, secured to its face. From the central portion of the pinion U a hub projects, having ratchet-teeth upon its periphery, and the pawl of the disk V engages therewith. Upon the opposite side of the pulley O is a disk, Q, also keyed to the shaft, and pressed against the pulley O by a pressure-spring, R, which encircles the shaft, as shown. In this way the pulley is held between the disks V and Q, and is revolved by the frictional contact therewith. The pinion U is revolved by the segment T, which transmits its motion to the shaft 35 through the ratchet and pawl and the disk V.

After the picket has been deposited upon the table and the continued operation of the machine has twisted the wires upon the front, it is discharged from the table by the following means: On the rear portion of the shaft 1 is a bevel-gear, 2, which meshes with a similar bevel-gear, 3, on a shaft supported in bearings at right angles to the shaft 1. A cam, 12, on this shaft operates upon an arm, 13, of a shaft, 14, to depress the said arm, which action revolves the shaft 14 a certain distance. A spring, 39, presses upon the under side of the arm 13, and returns it to its normal position after the cam 12 has left it. The shaft 14 runs along beneath the tables, and has arms 15 15 extending up directly in front of the place where the pickets are discharged upon the table and between the pickets and the twisters. The parts are so timed that after a picket has been woven into the fence the cam 12 strikes the arm 13, rocks the shaft 14 about a quarter-turn, which causes the arms 15 15, one at each end, to be impelled suddenly toward the picket, striking the same and discharging it from the table. As soon as this is done the spring 39 acts to return the arm 13 and shaft 14, and the arms 15 assume a vertical position until another picket is to be discharged.

As the fence is made it is carried over an idle roller, 11, supported in the frame in rear of the twisters to a revolving roller mounted upon the lathe-points 9 10. The point 10 has screw-threaded bearings, so that the roller may be removed at will. After a certain amount of fencing has been made the roller is removed from its bearings, and, in order to render it possible to withdraw the roller from the center of the completed fencing without unrolling the same, I have constructed it in two parts, 41 and 42, of wedge shape, the heads 43 and 44 holding the ends of the parts together. By this construction the sections of the roller may be readily removed and a plain roller substituted, so as to keep the roll of fencing in its proper shape.

The revolution of the roll must be proportioned so as to move more slowly as the fencing upon the roll increases in size, as there must be no undue strain upon the wire, but the fencing must be taken up just as it is made.

Screw-threaded cones B B' are secured in reversed position upon shafts marked, respect-

ively, b b' , the cone B having a gear-wheel secured to its shaft, through which it is operated. On the end of shaft B^2 , heretofore described in connection with the cam 12, is a face-plate, 5, having a pin in its surface, to which is connected a pawl, 6, which engages with the teeth of and operates the gear 7 on the shaft of the cone B. The cone B' is keyed to the shaft b' , which is formed at its other end with the lathe-center 9, heretofore described, for holding the roll. The cones are connected by a belt or band, 30, which is attached to the largest part of the cone B' , then wound about the screw-threaded or continuous channel, and then carried to the cone B and secured to the largest part thereof. The motion imparted is in the direction of the arrow in Fig. 4, which will wind the belt from the cone B' to B, and during the unwinding the cone will constantly decrease in speed. After the belt has been wound upon the cone B it may be rewound upon the cone B' by applying a wrench upon the squared end of the shaft b' . The pawl 6 must be thrown back out of engagement during this rewinding. A check, g' , may be applied to the end of shaft b' , if desired.

The machine moves with great rapidity, and is perfectly automatic, requiring only the placing of the pickets on the brackets.

Having thus described my invention, what I claim is—

1. In an automatic fence-making machine, twisting mechanism consisting of twisters having gears on their central portion operated by a rack, L, extending beneath the same, a pinion, I, upon the end of the first twister operated through mechanism intermediate between said pinion and the driving-shaft, whereby motion is communicated through said pinion I to the twister J' , and from thence through the rack L to the other twister, all substantially as described.

2. In an automatic fence-making machine, the combination, with twisting mechanism, receiving-brackets 16, having rounded faces, and feeding mechanism, substantially as described, of discharging mechanism consisting of a shaft, 14, having a spring-arm, 13, operated by a cam, 12, to rotate the said shaft 14, arms 15 on said shaft at each end thereof arranged, in the movement of the shaft 14, to discharge the picket from the table, substantially as described.

3. In an automatic fence-making machine, the combination, with twisting mechanism, feeding mechanism, and discharging mechanism, of a roller for taking up the finished fence, and mechanism connected with said roller, consisting of screw-threaded cones placed in reverse position and connected by a band for causing the roller to move more slowly as the roll of fencing increases in size, substantially as described.

4. In an automatic fence-making machine, the combination, with the twister J and the mechanism for driving the same, of the pinion I, having the projection I' arranged to be operated upon by the plates H H, secured to the segment G, whereby the twisters are held from moving continuously, substantially as described.

5. In an automatic fence-making machine, the combination of the twisters supported in adjustable boxes M, pinions upon the center of each twister, means for operating the first twister, a rack, L, beneath the twister-pinions, arranged to receive motion from the first twister and communicate motion to the rest of the series, and supporting-rollers for said rack, substantially as described.

6. In an automatic fence-making machine, the combination of the adjustable holding-arms for the pickets, the traveling belt operated by mechanism substantially as described, the said belt having pins projecting from its face at intervals, adapted to strike against the end of the pickets as they are fed to the moving belt, and thus carried along by the said belt and deposited in proximity to the twisters.

7. In a fence-making machine, the combination, with a roller for taking up the finished fence, of means for proportioning the speed of said roller, said means consisting of screw-threaded cones placed reversely and connected by a band, one of said cones being fixed upon the shaft to which the roller is secured, and mechanism for operating said cones, consisting of a pawl and gear-wheel, said pawl being operated from a shaft, B^2 , all substantially as described.

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

ROBERT B. STAPP.

Witnesses:

CHARLES R. STAPP,
JOHN W. RHODES.