(No Model.)

M. C. HENLEY & H. FARMER.

TENSION DEVICE FOR FENCE MACHINES.

No. 338,738. Patented Mar. 30, 1886.

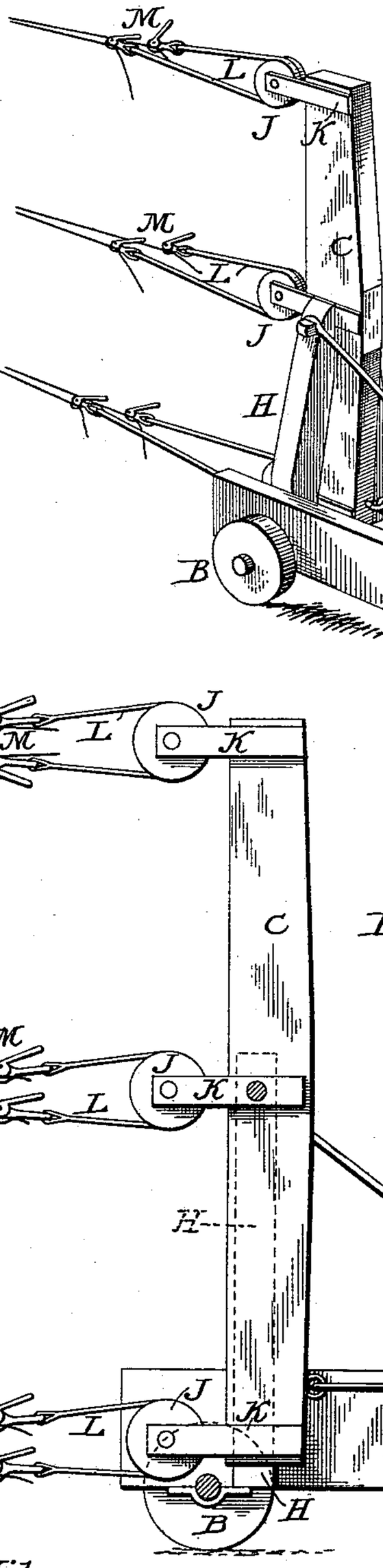

Fig. 1.

Fig. 5.

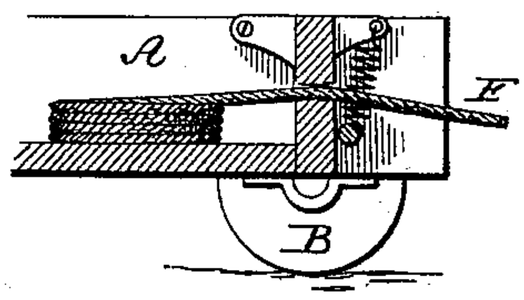

Fig. 2.

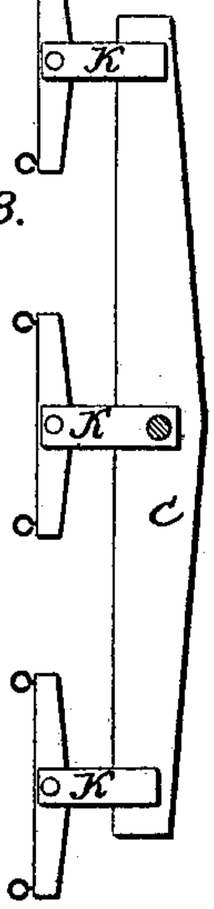

Fig. 3.

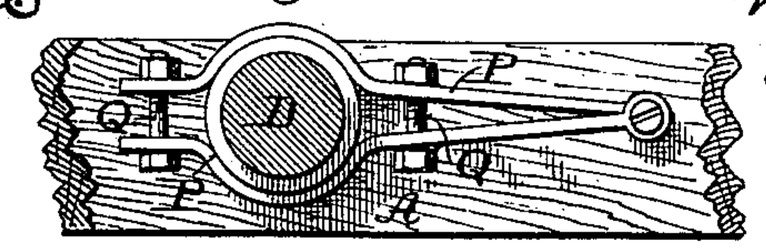

Fig. 4.

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UNITED STATES PATENT OFFICE.

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TENSION DEVICE FOR FENCE-MACHINES.

SPECIFICATION forming part of Letters Patent No. 338,738, dated March 30, 1886.

Application filed November 30, 1885. Serial No. 184,314. (No model.)

To all whom it may concern:

Be it known that we, MICAJAH CHARLES HENLEY and HENRY FARMER, both of Richmond, in the county of Wayne and State of Indiana, have invented certain new and useful Improvements in Tension Devices for Fence-Machines, of which the following is a specification.

This invention consists in a novel tension machine or device for use in the manufacture of that class of fencing in which pickets are held between wires passing on opposite sides of the pickets and twisted together between them, for the purpose of insuring uniform tension on each and every strand of wire. This device is auxiliary to and is designed to be used with any suitable twisting mechanism; but as such twisting mechanism forms no part of the present invention, and is common and well known, it is not described herein, nor is it shown in the annexed drawings, in which—

Figure 1 is a perspective view of the machine, illustrating the mode of its use; Fig. 2, a vertical longitudinal section of the same; Fig. 3, a view illustrating a modification of the device; Fig. 4, a modification of the friction-brake, and Fig. 5 another modification.

In the construction of fences of the class mentioned it is necessary to provide means for keeping the wires under uniform tension, not only the respective double strands, but also the individual members of each double strand. This necessity arises from the fact that the pickets frequently differ in thickness at different points in their length, which occasions the necessity of a relative adjustment of the tension of the several double strands, and from the further fact that the two faces of the pickets often differ at the same point in the length of the picket, which causes more wire to be taken up from one strand than from the other. The unevenness of the ground, and the consequent variation in the position of the twisting machinery and the tension device, are further causes from which the necessity arises. The machine or device provided to meet these requirements is illustrated in the drawings, and, as there shown, consists of a frame, A, of any suitable form, size, and material, mounted upon wheels or rollers B, for convenience in moving from place to place, and carrying an equalizing-beam, C, a drum or windlass, D, and a brake-lever, E, arranged to bear upon and to control the rotation of the drum. The drum or windlass has wound upon it sufficient length of rope, F, to extend from the drum to a stake, post, or other fixed anchor, G, at a considerable distance from the machine, and thence back to the same, one end of said rope being made fast to the drum and the other end formed into a loop, *a*, which encircles the brake-lever E and enters any desired one of a series of notches, *b*, formed in the face of the lever, as shown in Figs. 1 and 3. The brake-lever is pivoted at its lower end in the frame A at a point advisably below the axis of drum D, and when moved toward the drum and caused to bear against the same it produces friction proportionate to the pressure, and causes the drum to offer corresponding resistance against turning. By providing the series of notches *b* at different distances from the pivot of lever E and placing the loop *a* of rope F in one or another of said notches, the leverage and consequent pressure or retarding force may be regulated as required, the lever being moved and controlled through the strain put upon the rope.

At the end of frame A opposite to that at which the drum or windlass D is located are placed two uprights, H, between which is pivoted an upright bar, C, which we term an "equalizer." Carried by said equalizer-bar at top, bottom, and one or more intermediate points (or in some cases at top and bottom only) are pulleys J, carried by metal yokes or straps K, which may be either rigidly or pivotally attached to the bar I. Passing about each pulley is a rope or other flexible band, L, carrying at both ends a clamp, M, as shown in Figs. 1 and 2, capable of clamping and securely holding the individual strands of wire used in the construction of the fence. These clamps M may be of any desired construction; but in the drawings we have shown them as consisting of an eccentric lever, which clamps or binds the wire against a lug or shoulder on the body of the clamp. As above stated, two strands of wire are used at each level at which the pickets are bound or wired—one strand on each face of the picket—and the individual strands of each pair are separately clamped, one by each of the clamps M of the rope or band L of the pulley corresponding in height with

the height of the wires. Under this arrangement, as will be readily seen, the individual wires of each pair will be strained alike, because the band passing about the pulley will adjust itself to the strain upon the respective strands and draw upon both alike, and the respective double strands will similarly receive equal strain, because the equalizing-bar C in the same manner causes the draft or tension to be brought on both alike, swinging upon its pivot to slacken one and tighten the other, as may be required.

It is obvious that instead of the pulleys or loose-running bands shorter equalizers may be used, as in Fig. 3, the difference being merely one of form and not of principle, since the pulley is but one form of lever. The uprights H are suitably braced to enable them to withstand the strain brought upon them in using the device.

With the machine thus constructed the operation is as follows: A stake or post, G, is placed at a suitable distance from the point at which the pickets are being woven into the fence, and in line with the fence to be formed, and a sheave or pulley, N, is attached to said stake, as shown in Fig. 1. The rope F is then carried from the drum or windlass to and around the pulley N, thence back to the lever E, where it is formed into a loop, *a*, and passed over and around the same and laid into any one of the grooves *b* required. The wires are then secured in clamps M—one strand in each—and the winch or handle O of the drum D is turned to draw the rope F tight, and to place the wires under the required degree of tension. As the rope draws taut, it causes the brake-lever E to bear with increased force upon the drum, and finally stops its rotation, holding it with sufficient power to prevent its turning backward and relieving the tension on the wires, unless such tension be increased. As the wires are twisted between the pickets, they become shortened, and their tension is accordingly increased, and as this increase occurs the wheeled frame A is drawn toward the twisting-point, overcoming the friction of lever E on the drum D, and permitting the wire to shorten up, as required by the twisting.

In first starting to use the machine it is set close to the stake G, and at a considerable distance from the point where the twisting is to be done; but as the twisting proceeds the completed fence approaches the machine, the drum turns backward and pays out the rope, and the machine approaches the twisting-point. When the two approach within a short distance of each other, the clamps are caused to release the wires, the frame A is run back and attached to a stake suitably located, and the work is repeated, and so on until completed. As the lever E acts always with the same leverage after the loop is applied to any given notch, the friction upon the drum, and consequently the tension upon the wire, remains uniform throughout the operation of the machine, and the equalizer causes the double strands and the individual strands of said double strands to be placed under like tension throughout. As a consequence, a very uniform and regular fence is formed, and this without difficulty or extra labor.

We are aware that it has been proposed to employ an evener-bar attached to a suitably-loaded stone-boat, for the purpose herein set forth; but our plan is advantageous over such prior plan, in that it is not in any manner dependent upon the character or lay of the ground over which it travels, and, further, in that each individual strand of wire is placed under the same tension as all the other strands. The pulley N is not essential, and the rope may pass directly about a rounded stake, though the pulley is deemed desirable.

Instead of using a drum, the rope may be merely carried upon frame A, and the brake arranged to bear directly upon it, holding it against a fixed bearing-surface, as shown in Fig. 5. So, too, instead of employing the automatic brake above described, we propose in some cases to make use of one or more jaws or arms, to bear upon or clasp the drum, and pressed or drawn against the same with any required force by means of a screw or screws. Such a device is shown in Fig. 4, in which P P indicate two arms, which may be of wood, iron, or like material, but which are preferably made of spring-steel, curved to partially encircle the drum and drawn together to bear upon the drum by means of screws or bolts Q. By tightening or loosening these bolts the friction may be increased or diminished at will. When this form of brake is employed, it is of course unnecessary to carry the rope back to the frame or carriage, one end being in such case made fast to the drum and the other to the stake or anchor.

Having thus described our invention, what we claim is—

1. A tension device for use in fence-building, consisting of a traveling frame provided with means of attachment to the fence-wires, a drum, a rope, a friction-brake serving to control the paying out of said rope, and a fixed stake or anchor, the rope passing from the drum to the anchor and thence back to the brake.

2. In a tension device, the combination of a traveling frame provided with means for attaching the wires, a drum carried thereby, a brake for said drum, and a rope or band passing about a stationary anchor and attached at opposite ends to the drum and the brake.

3. In a tension device, the combination of a traveling frame, an equalizer-bar provided with clamping devices to hold the fence-wires, a rope or band carried by the traveling frame, a brake adapted to control the paying out of said rope, and a stake or anchor about which the rope passes.

4. In a tension device of the character described, an equalizer-bar provided with independent equalizers for each pair or double

strand of wire, whereby the double strands and the individual members of the double strands are caused to receive exactly the same tension.

5. In a tension device such as set forth, the combination of a main equalizer-bar, as C, and two or more independent equalizers carried thereby, each consisting of a pulley, J, and a flexible band, L, provided at each end with a clamping device, as M.

6. The herein-described wire-stretching machine or tension device, consisting of traveling frame A, provided with main equalizer C, carrying independent equalizers having clamps M, drum D, brake E, and rope or band F, all constructed and arranged to operate substantially as described and shown.

7. A tension device for use in fence-building, consisting of a traveling frame provided with means of attachment to the fence-wires, a rope, a friction-brake serving to control the paying out of said rope, and a fixed stake or anchor, the rope passing from the traveling frame to the anchor.

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