No. 611,660. Patented Oct. 4, 1898.

J. M. TRULL.

WIRE FENCE STRETCHER.

(Application filed Mar. 29, 1897. Renewed Mar. 5, 1898.)

(No Model.)

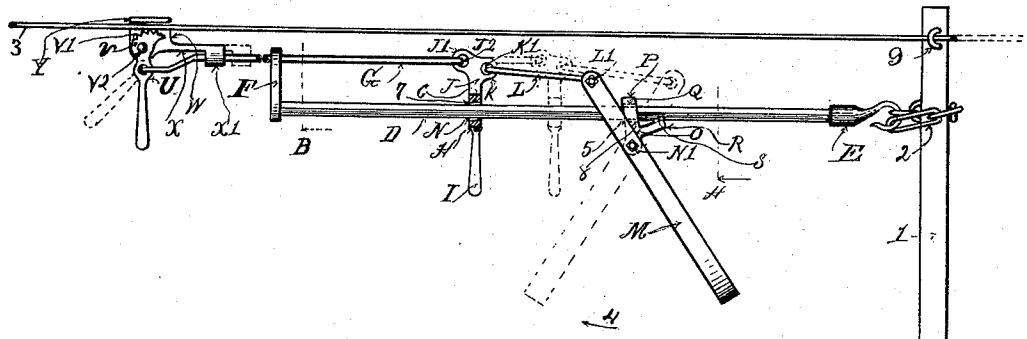

Fig. 1.

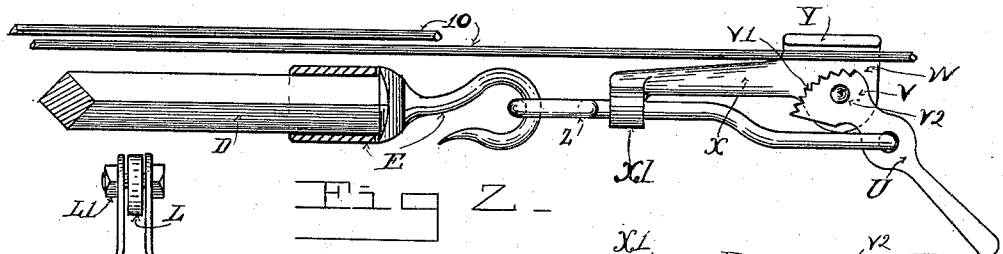

Fig. 2.

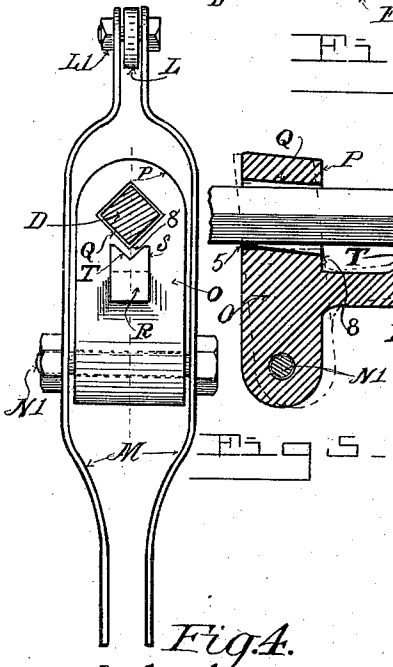

Fig. 5.

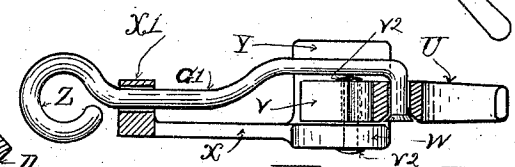

Fig. 3.

Fig. 4.

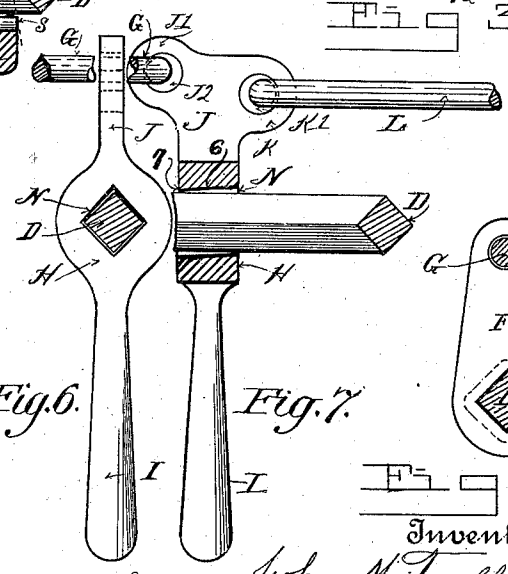

Fig. 6.

Fig. 7.

Fig. 8.

Witnesses

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WIRE-FENCE STRETCHER.

SPECIFICATION forming part of Letters Patent No. 611,660, dated October 4, 1898.

Application filed March 29, 1897. Renewed March 5, 1898. Serial No. 672,780. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. TRULL, a citizen of the United States of America, residing at Trull, in the county of Routt and State of Colorado, have invented certain new and useful Improvements in Wire-Fence Stretchers; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in wire-fence stretchers; and the object of my invention is to provide a simple, durable, and easily-operated wire-fence tightener that will tightly grip and hold a wire without slipping while it is being tightened. I attain this object by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 represents my improved wire-fence tightener in side elevation with one end secured to a post and the opposite end clamping a wire; Fig. 2, a fragment of the wire-stretcher with a removable clamping device connected to the post-attaching end of the wire-stretcher, which is used where a wire is broken in two and needs to be spliced; Fig. 3, a plan view of the clamping device shown in Fig. 2, partly in section; Fig. 4, a cross-section of Fig. 1 on line A in the direction of the arrow, showing an end elevation of one of the creeping dogs; Fig. 5, a sectional side elevation of the same creeping dog; Fig. 6, an end elevation of the wire-holding dog; Fig. 7, a side elevation of the same, partially in section; and Fig. 8 an end elevation of Fig. 1 on line B in the direction of the arrow, showing an elevation of the piece F of the frame.

Similar letters and figures of reference refer to similar parts throughout the several views.

Referring to Fig. 1, D designates the main bar of the machine. It is made of a square rod of iron and is arranged in the machine, preferably with two of its edges in vertical alinement with the center of the rod. At one end of this rod I secure rigidly a hook E and to the opposite end an arm F. The outer end of this arm supports loosely in a perforation a bar G. This bar and the arm F and the bar D form the framework of the stretcher. Upon the bar D, I loosely mount a two-armed lever H, which I term a "holding-dog." One end I of this lever is formed into a handle, and at the opposite end J two circular projections J′ and K are formed, both of which have holes through them. One of these holes K′ is placed closer to the center of the bar D than the other hole J^2, which should be a little farther away. I secure one end of the rod G to the lever by hooking it into the hole J^2, and in the hole K′, I hook one end of a rod L, the opposite end of which is pivotally secured to the end of a hand-lever M. The hole N of the lever H, through which the bar D passes, is formed to pass through the lever at an angle with the length of the lever, and this angle of the hole diverges from that side of the lever the hole J′ is on and upward toward the hole K′ to the opposite side, as shown in Figs. 1 and 7. The handle M, I preferably make by folding at its center a long piece of thin iron of suitable width, as shown in Fig. 4, and then bending it at its end to fit on each side of the end of the rod L and bolting pivotally the end of the handle and the rod together by a bolt L′. A short distance from this end and on the opposite side of the main bar D of the stretcher I pivot, by a bolt N′ between the sides of the handle, a two-armed lever O, which I term a "creeping dog," one arm P of which contains a square hole Q, which fits loosely the square bar D. This hole is formed through the arm at an angle to the sides of this arm of the lever, and is inclined in an opposite direction relative to the axis of the bar D to the hole through the holding-dog. The other arm R of this lever extends laterally from the side of the first arm and is arranged to extend centrally under the lower edge of the square bar D when the stretcher is held in an operative position. The end of this arm is provided with a short upward projection S, in which is formed a V-shaped notch T, adapted to register with the lower sides and corner of the bar. In the outer end of the rod G, I make, first, an inclined bend toward the bar D, and then a bend approximately parallel with the bar D and with the rod G, and then turn the extreme end at right angles and to the end of it pivot the gripping-

cam U, as shown in Fig. 3, countersinking the bottom side of the hole in the cam and upsetting the end of the rod. The gripping-cam consists of a lever-shaped member, one end of which is formed into a handle, and the opposite end is formed into an involute-shaped cam V, the face V′ of which is serrated. I pivot the cam to a plate W, which has a rearward extension X, at the end of which a sleeve X′ is formed, which surrounds loosely the rod G. The plate is formed with a projecting jaw Y, which is arranged opposite the face of the cam. The cam and the plate form the fence-wire-gripping device of the stretcher. In Figs. 2 and 3 I illustrate a gripping device oppositely arranged from that shown in Fig. 1 and adapt it to be applied to the opposite end of the bar D in order that both may be manipulated from the same side of the stretcher. In Figs. 2 and 3 the wire-gripping device is shown with a loop Z at the end of a piece of rod G′, which is similar in shape to the end of the rod G. This loop is hooked to the hook E at the end of the bar D, the chain shown in Fig. 1 being removed. The operation of the stretcher is as follows: When a wire of a fence is to be stretched, the hook end of the bar D is secured to the post 1 by a chain 2 or a rope. The gripping device at the opposite end of the stretcher is then manipulated to grip the fence-wire 3, which is accomplished by first moving the handle portion to the position shown in dotted lines in Fig. 1. This moves the cam away from the jaw Y of the plate, as shown by the dotted lines, and forms a space between the two for the wire to be laid in between them, as shown in the oppositely-arranged gripping device in Fig. 3. The plate, which is pivoted to the cam by an independent pivot V^2, moves with it, and its sleeve portion slides back on the rod G in the direction indicated by the dotted lines. The stretcher is then raised to the wire and the wire placed between the jaw, and the cam-handle of the cam is then grasped and moved to grip the wire between the cam and the jaw, as shown in Fig. 1. By this arrangement of gripping device I am enabled to grip the wire very tightly and at the same time to instantly release it by a reverse movement of the handle, as this arrangement of gripping device does not bind or stick. The operator then grasps the handle end of the lever M with one hand and moves it in the direction of the arrow 4, and at the first start of this movement of the handle the lever end of the creeping dog O is moved with it which tips or rocks the lever or its inclined hole in the direction the lever is moved and moves the edge 5 of this hole up in contact with the lower edge of the bar D, as shown in Fig. 5. The edge being sharp, it toes into and dogs or locks the creeping dog against moving along the bar as the handle is moved in the direction of the arrow 4. The instant the creeping dog tilts it catches and the handle then pivots on the bolt N′, and as it is moved to the position shown by the dotted lines its outer end pulls on the rod L and draws the holding-dog H along the bar D, as when the top of this dog is drawn toward the handle M the holding-dog is tipped, so that the top part 6 of its inclined hole N lies upon the top edge and sides of the bar, in which position it slides easily along the bar, and as it does so draws the rod G and the gripping device at its end and the wire 3, which is held by it with it, the dotted lines representing approximately the positions of the handle and the holding-dog after a full movement of the handle in the direction of the arrow 4. When the handle is released or the instant the pull on it is slackened, the back pull of the wire 3, pulling on the rod G and on the top of the holding-dog, tilts it in an opposite direction and toward the gripping device and moves the top edge 7 of its inclined hole against the top edge of the bar D, into which it toes, as shown plainly in Fig. 7, thus holding it from slipping back on the bar and retaining whatever slack of the wire has been taken up by the movement of the handle M. This holding-dog thus locks itself automatically and will not slip back on the bar when both bar and rod are under strain in opposite directions. The lever M is then swung back again to the position shown, and in swinging back it pivots on the bolt L′ at its end, and at the start the lower end of the lever O is tilted toward the post and its lock broken. It tilts until the arm R is moved in contact with the edge of the bar, which moves and holds its inclined hole parallel with the bar as long as this movement of the handle continues and prevents its edge 8 from catching on the lower edge of the bar. The creeping dog or lever Q then slides along the bar as the handle is moved back in position to get another stroke, when it is repeated and the holding-dog is moved another step on the bar and the wire correspondingly stretched. This is repeated step by step until the wire is drawn tight when its end is fastened to the post by a staple 9. When a wire is broken between posts, I mend it by removing the chain from the hook at the end of the bar D and attach a gripping device similar to that shown in Fig. 1, which I illustrate in Figs. 2 and 3. In Fig. 2 I show this gripping device and a fragment of the bar D with the ends of a broken wire 10 between its cam and jaw Y. The gripping devices at each end of the stretcher are applied to the ends of the wire, and they are drawn together until they overlap and are then twisted together.

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

1. The combination in a wire-fence stretcher of the square bar, the hook, and the arm, with a rod, having a wire-gripping device at its outer end, a two-armed lever loosely mounted on said bar having its aperture which fits on

the bar inclined upward from the bar's axis in an opposite direction from the gripping device on the end of said rod and said arm, and having one arm depend below said bar and the other extend above the bar and pivotally connected to the inner end of the said rod, a second rod pivotally connected to the same arm of said lever at one end nearer to the axis of the square bar than the first-named rod, an operating-handle pivoted to the opposite end of said second-named rod, and a creeping dog pivoted to said lever arranged and adapted to lock the said handle against movement toward the first-named lever and to slide it along the bar when moved away from it, substantially as described.

2. The combination with the square bar, the hook, the arm, the operating-handle and the creeping dog of the rod adapted to reciprocate freely through the outer end of said arm, the holding-lever pivoted to the inner end of the said rod and having an inclined square hole therein fitting freely said square bar and adapted to allow the said holding-lever to be tilted by a strain away from the hook end of said bar and to permit one of the edges of said hole to press or toe into said square bar and prevent said holding-lever and rod from slipping on said square bar, and means for operatively connecting said holding-lever to said operating-lever substantially as described.

3. The combination with the square bar, the rod, the operating-handle, the creeping dog the holding-lever and the rod connecting the said operating-handle to the said holding-lever, of a wire-gripping device at the end of said rod comprising a lever having a handle at one end and a cam formed on the opposite end having its face serrated, said lever being pivoted to the end of said rod, a plate pivoted to said cam end of said lever at a short distance from its pivotal connection with the end of said rod, and provided with a projection arranged in front of the face of said cam and having said plate provided with a rearward extension containing a sleeve surrounding said rod, substantially as described.

4. The combination in a wire-fence stretcher of the square bar arranged with two of its edges in a vertical plane, and having a hook secured to one end and an arm secured to the opposite end, the rod adapted to move freely through the outer end of said arm and having a wire-gripping device substantially as shown and described pivoted to its outer end, the holding-lever mounted on said square bar and pivotally connected to the inner end of said rod, the operative handle, its creeping dog, and the rod connecting the handle with the holding-lever, with a gripping-dog comprising a short piece of wire having a ring at one end adapted to said hook and its opposite end adapted to pivotally support a lever, a lever pivoted to said wire, having a handle formed at one end and a substantially involute cam on the opposite end and at a short distance from the lever's pivotal center and the face of said cam end provided with teeth, a plate pivoted to the central portion of the cam end of said lever having a side portion extending up in front of the face of said cam and adapted to form an opposing jaw to it and an extension to said plate having a sleeve at its end surrounding the said wire adjacent to its ring end, whereby the said plate and its opposing jaw move with the cam end of said lever when swung on its pivot to receive and grip, or release a fence-wire, substantially as described.

5. The combination in a wire-fence stretcher of a square bar arranged with two of its edges in a vertical plane, an arm secured to one end of said bar and a hook secured at its opposite end, a rod supported loosely in the outer end of said arm in alinement with the vertical edges of said rod, a lever journaled approximately at the central portion of its length on said square bar and also arranged in vertical alinement with said vertically-arranged edges of the bar and having its bar-fitting hole square and inclined at an angle through it and inclined upward from the top edge of said bar and away from said arm at the end of said bar and having one end pivoted to the one end of said rod and the other end adapted for a handle, an operating hand-lever adapted to straddle said bar, a lever mounted to said bar at one end having an inclined square hole through it inclined in an opposite direction from the hole in said first-named lever and pivoted at its lower end to said operating hand-lever and having a laterally-extending arm adapted to bear on the lower edge of said bar, a rod pivotally connected at one end to said operative lever and at the opposite end to the upper end of the first-named lever and adjacent to the pivotal end of said rod, with a fence-wire-gripping device, substantially as herein shown and described pivoted to the outer end of said rod and a similar gripping device adapted to be detachably secured to said hook at the end of said bar, substantially as described.

6. The combination in a wire-stretcher of a square bar arranged with two of its edges in a vertical plane, a rod supported reciprocably by an arm secured to one end of said square bar in approximately vertical alinement with the two vertically-arranged edges of said bar, a holding-lever having a square aperture centrally of its length and inclined to the sides of the lever, mounted loosely on said square bar and pivotally connected at one end to the inner end of said rod, a second rod pivotally secured at one end to said holding-lever adjacent to the end of the first-named rod and a little nearer to the square bar than the first-named rod, with an operating-handle pivotally secured above the square bar to the opposite end of said second-named rod, and at its end, and adapted to extend below the said square bar and pivotally connected below said square bar to a

creeping dog, comprising a two-armed lever, one arm of which contains a square hole inclined to the sides of this arm of the lever and inclined in an opposite direction from the inclined hole in said holding-lever, and adapted to lock the said handle when operatively moved against movement toward said holding-dog, and the other arm of which extends laterally from the first-named arm under the lower edge of said bar, a V-shaped groove in the end of said arm adapted to register with the lower edge and sides of the bar, and with a wire-gripping device at the outer end of said first-named rod, comprising a lever pivoted to the end of said rod and having a handle at one end and a cam at the opposite end, a jaw pivoted to the center of the cam end and a rearward extension adapted to slidably embrace said first-named rod, substantially as described.

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

JOHN M. TRULL.

Witnesses:

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