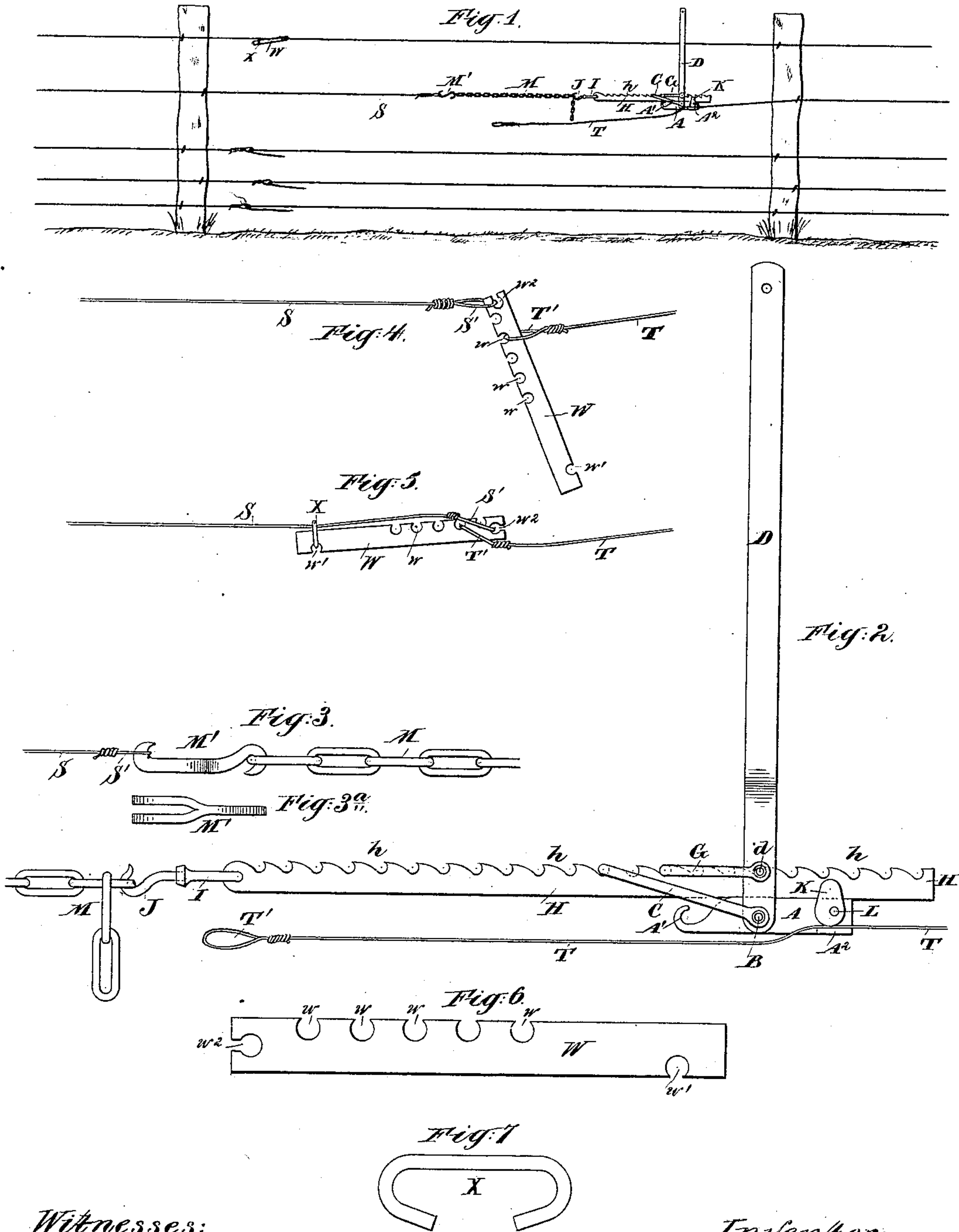


(No Model.)

W. A. MURRAY.
WIRE TIGHTENER.

No. 371,514.

Patented Oct. 11, 1887.



Witnesses:
Charles R. Searle,
Lyndon P. Smith.

Inventor:
William Archibald Murray
by his attorney
Thomas Drew Nelson

UNITED STATES PATENT OFFICE.

WILLIAM ARCH. MURRAY, OF PIAKO, AUCKLAND, NEW ZEALAND.

WIRE-TIGHTENER.

SPECIFICATION forming part of Letters Patent No. 371,514, dated October 11, 1887.

Application filed October 9, 1885. Serial No. 179,422. (No model.) Patented in New Zealand July 31, 1884, No. 1,177; in England July 11, 1885, No. 8,421, and in Victoria December 31, 1885.

To all whom it may concern:

Be it known that I, WILLIAM ARCH. MURRAY, of Piako, Auckland, New Zealand, have invented a certain new and useful Improvement in Wire-Fence Strainers, (patented to me in New Zealand July 31, 1884, No. 1,177; in England July 11, 1885, No. 8,421, and in Victoria December 31, 1885,) of which the following is a specification.

I employ a device, which I term a "jack," equipped with means for effecting the taking up of the slack or effecting the principal portion of the straining movement, and I provide further devices, which I term a "key" and "clip," which hold the wire without relaxing any of the strain. The jack is then easily disengaged. The parts left on the fence are of little bulk, weight, or cost.

The accompanying drawings form a part of this specification, and represent what I consider the best means of carrying out the invention.

Figure 1 is a general side elevation of a section of fence with my invention applied thereto. In this figure the upper wire is strained, the second is being strained, and the third, fourth, and fifth are ready for straining. The succeeding figures are on a larger scale. Fig. 2 is a side elevation of my jack in position for use, with a portion of the chain through which the straining-tension is transmitted. Fig. 3 shows another portion of the chain and its engagement with one of the wires. Fig. 3 may be considered as a continuation of Fig. 2, applying at the left thereof. Fig. 3^a is a plan view of the double hook. Fig. 4 shows the wires after the jack has completed its work and when the ends of the strained wires are first engaged by the key. Fig. 5 shows the same parts, with the addition of the clip, after they have been brought into the position in which they are left. Fig. 6 represents the key detached. Fig. 7 represents the clip detached.

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

A is a fulcrum-piece, of iron or steel, certain portions being designated, when necessary, by additional marks, as A' A².

B is a bolt, which forms the center for a link-pawl, C, and also for a forked lever, D, which latter is connected by trunnions *d* with a link-pawl, G.

H is a bar, furnished on its upper face with inclined notches *h*, and on one end with a link, I, which connects to it a swivel-hook, J.

The piece A is provided with a hook, A', at one end, and with a clamping-surface, A², at the other end. This clamping-surface A² serves, in connection with an eccentric-clamp, K, turning on a center, L, carried on the piece A, as means for strongly seizing a wire and holding it firmly against strain.

M is a chain equipped at one end with a double or bifurcated hook, M'.

Assuming the operation to be effected at the junction of two lengths of wire, the jack is engaged with the right-hand wire, T, by means of the clamp K A², and the notched bar H *h* being introduced and engaged with the link-pawls C G, the double hook M' is engaged with a loop in the end of the left-hand wire, S, and one of the links of the chain M is then engaged with the hook J; but this link should not be the first one. It is important that a few of the links at the extremity of the chain be left free, for a use which will appear further on. Now the lever D is vibrated to the right and left. Every movement to the left engages the link-pawl G with a fresh notch, *h*. Every movement of the lever D to the right hauls the bar H *h* to the right and allows the link-pawl C to drop into a new notch. This holds the bar while the lever D is again moved to the left to take a new hold, and the operation is repeated. When this operation has proceeded far enough, the loose end of the chain M, which has been so far hanging idle, is engaged on the hook A', and the lever D being again vibrated and the pawls lifted the bar H is relieved from tension. Now the bar H is moved to the left and its hook J engaged in the chain M in a new place farther to the left, and the jack is again operated until a further length of the chain is taken up and hooked on the hook A'.

When the wire is enough strained, I make a loop, T', on the right-hand wire, T, almost touching the loop S' on the left-hand wire, S.

I employ for the permanent engagement of these loops parts which I term a "key" and "clip."

W is the key. It is provided with deep notches *ww* along one edge, a single deep notch, *w'*, on the other edge, near one end, and a deep notch, *w²*, in the opposite end. X is a clip, of stout iron or steel wire, bent into a shape approximating the form of the letter C. I provide a liberal supply of these keys and clips.

To engage the loops S' T', I insert one of the keys W partially through the loop T' and engage such loop in one of the notches *w*. Then I engage the loop S' of the opposite wire in the end notch, *w²*. The parts being now in the position shown in Fig. 4, the key is ready to serve as a lever, the free end of which is moved to the left by the force of the hand until it lies adjacent to the wire S, thus carrying the looped ends S' T' a little past each other and giving the final strain to the wires. Now the clip X is applied, engaging the wire S with the key, it being held in place by means of the notch *w'*, and the work is complete, ready to stand for an indefinite period, or until the wires shall again require straining. The keys should weigh about six ounces each. Four per wire per mile are sufficient.

My jack and its attachments and my keys and links are equally suited for barbed wire or common wire. Each wire of a fence can be strained in two or three minutes.

The invention requires no special adaptation of posts by boring or otherwise. Two out of three straining posts ordinarily used are saved.

Modifications may be made in the forms and proportions without departing from the principle or sacrificing the advantages of the invention. I can use simple hook-pawls instead of the link-pawls C and G. The hook J may

be attached stiffly, instead of being allowed to swivel.

Parts of the invention may be used without the whole. I can use the jack with its chain, and employ other means than the key and clip for permanently connecting the loops S' T' after the fence has been properly strained.

I do not claim in this application the key W and holding clip or link X, these being claimed in my application, No. 219,569, filed November 23, 1886.

I am aware that wire tighteners embodying some of the features of this invention have been known before, and are shown in patents to George S. Dean, July 24, 1883; S. J. MacDonald, July 28, 1885, and others. I do not wish to be understood as claiming such, broadly; but

What I do claim is—

1. The combination, with the fulcrum-piece A, having clamp K A² and with the lever D and pawl C, supported in said piece A, of the pawl G, pivoted to the lever D, and the toothed bar H *h*, having hook I J, as and for the purposes set forth.

2. The combination, with the fulcrum piece A, having clamps K A² and hook A', and with the lever D and pawl C, both centered upon the bolt B, supported in said piece A, of the pawl G, toothed bar H *h*, swivel-hook J I, and chain M M', all arranged and operating as and for the purposes set forth.

In testimony whereof I have hereunto set my hand, at Auckland, New Zealand, this 1st day of August, 1885, in the presence of two subscribing witnesses.

WM. ARCH. MURRAY.

Witnesses:

FRANK H. WILLIAMS,
GEORGE FRASER.