

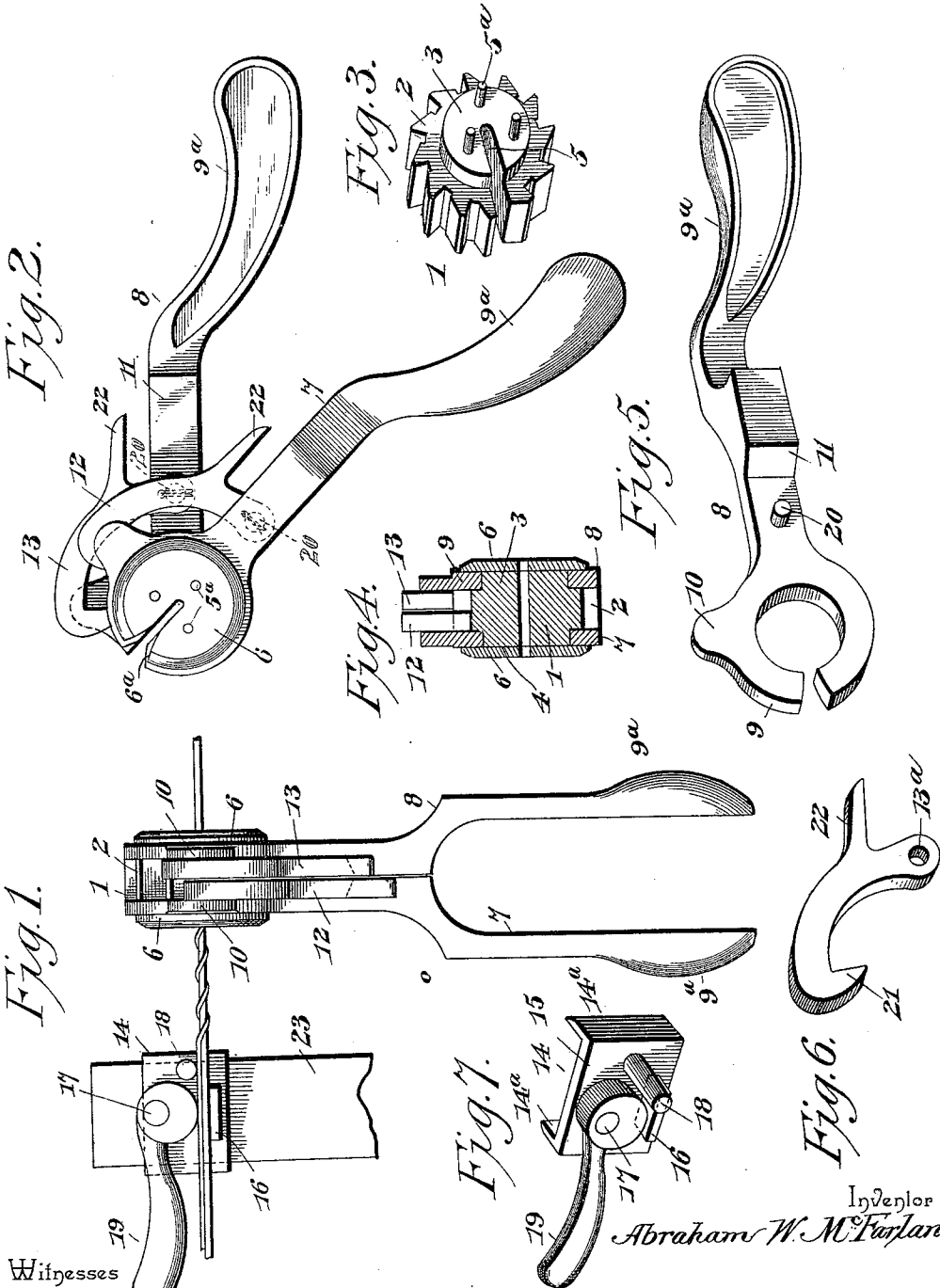
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Patented Nov. 29, 1898.

A. W. MCFARLAND.
FENCE WIRE TWISTING MACHINE.

(Application filed Dec. 14, 1897.)

(No Model.)



Witnesses

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FENCE-WIRE-TWISTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 614,970, dated November 29, 1898.

Application filed December 14, 1897. Serial No. 661,846. (No model.)

To all whom it may concern:

Be it known that I, ABRAHAM W. MCFARLAND, a citizen of the United States, residing at Portland, in the county of Jay and State of Indiana, have invented a new and useful Wire-Fence Machine, of which the following is a specification.

The primary object of the present invention is to simplify the construction of machines of that class which are operated by hand for the purpose of intertwining a stay-wire around a longitudinal strand with a view to reducing the component parts to the smallest possible number and of minimizing the weight of the structure, thus producing a machine which may be easily handled or carried and which is efficient and reliable in operation.

A further object that I have in view is to provide an improved type of clamp by which the stay-wire is held in rigid parallel relation to the strand-wire for the purpose of facilitating the application of the stay-wire to the strand-wire and of properly spacing the wires, so that the resulting fence structure or fabric will have its wires uniformly united or tied together to present a neat appearance.

With these ends in view the invention consists in the novel construction and combination of parts, which will be hereinafter fully described and claimed.

To enable others to understand my invention, I have illustrated the same in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a plan view of the twisting mechanism applied to a line-wire and stay-wire of a fence and illustrating the position of the clamp by which said wires are held in rigid relation to each other during the operation of twisting the stay-wire around the line-wire. Fig. 2 is a side elevation of the twisting-machine, showing the operating-levers thereof out of line with each other in the act of rotating the twister-wheel. Fig. 3 is a detail perspective view of the twister-wheel detached from the machine. Fig. 4 is a transverse sectional view through the twister-wheel, the face-plate, and the rings of the operating-levers, showing the pawls in eleva-

tion. Fig. 5 is a detail perspective view of one of the operating-levers detached from the machine, and Fig. 6 is a similar view of one of the feed-pawls. Fig. 7 is a detail perspective view of the clamp.

Like numerals of reference denote like parts in each of the several figures of the drawings.

1 designates the twister-wheel, which is made in a single piece of metal for simplicity in construction and to reduce the weight and size of the same. This twister-wheel has the periphery of its central part or body provided with a continuous series of transverse ratchet-teeth 2, and from the ends of said wheel protrude the smooth-faced cylindrical bosses or hubs 3 4, which are of less diameter than the central ratchet-body of said wheel. A radial slot 5 is cut through the ratchet-body and cylindrical bosses of the twister-wheel, the head end of said slot terminating at or adjacent to the axis of the wheel and the throat or open end extending through the ratchet-surface of the wheel, said radial slot extending entirely through the hubs and ratchet of the wheel. This twister-wheel is further provided with studs or pins 5^a, which project outwardly from the lateral faces of the cylindrical hubs or bosses 3 4, and said studs or pins are adapted to be headed or swaged down upon the face-plate 6. These face-plates are applied laterally against the faces of the cylindrical bosses or hubs in a position to lie parallel to the twister-wheel, and said face-plates are held by the studs or pins in rigid relation to said twister-wheel, so that they are adapted to rotate or turn therewith during the operation of intertwining or cabling a stay-wire around the line-wire. These face-plates are spaced laterally by the cylindrical bosses or hubs from the central ratchet-body of the twisting-wheel, so as to leave angular spaces or channels between the face-plates and the central ratchet-body, and said face-plates are further provided with radial slots 6^a, which are formed therein coincidently with the radial slot 5 of the twister-body, whereby the rotary member of the twisting mechanism is adapted to properly embrace the stay-wire and receive the line-wire for the purpose of making said rotary

member carry the stay-wire around the line-wire during the rotation of the twister-body by the action of the levers and the feed-pawls.

The levers 7 8 are wholly independent of each other, and they are arranged alongside of and in close relation to one another; but said levers are mounted on the twister-body to enable them to have free movement or play thereon and to be held in proper position with relation to the twister by very simple means. Each lever is cast in a single piece of metal with a divided ring 9 at one end and an offset handle portion 9^a. The divided ring 9 of one lever is fitted loosely on one of the cylindrical smooth-faced bosses or hubs 3 or 4 of the rotary twister-wheel, which thus serves as a journal or fulcrum for the lever, and said divided ring of each lever is provided with an upwardly-projecting guide ear or lug 10 situated in the vertical plane of the lever and adapted to have one of the feed-pawls bear laterally against its inner face, so as to properly position the feed-pawl with relation to the ratchet-body of the twister-wheel. Each lever is further provided at a point intermediate between its handle portion and the divided ring with an offset flange 11, and the levers 7 8 are mounted on the twister-wheel, so that these offset flanges 11 of the two levers face each other and are adapted to ride against one another as the levers pass each other in the operation of the machine.

The offset flange 11 on the inner face of each lever provides a space sufficient to accommodate the heel of the gravity feed-pawl, the pawl for the lever 7 being indicated at 12 and the pawl for the lever 8 at 13. Each gravity feed-pawl is provided with a curved heel 13^a, that is apertured to fit loosely on a stud 20, integral with the lever and situated in advance of the offset flange 11 thereon. The feed-pawl is further provided with an angular nose or beak 21 at its free end, and at the opposite end of said pawl is a thumb-piece 22, arranged to project over the offset flange 11 and to be readily accessible at all times to the operator whenever it is desired to lift the pawl and free its nose or beak from engagement with the central ratchet-body of the twister-wheel.

In my improved machine the single twister-wheel with the smooth-faced cylindrical bosses provides the journals for the independently-operating hand-levers, and the face-plates are rigidly united to said single twister-wheel in a manner to confine the divided rings of the levers between the central ratchet-body of the twister-wheel and said face-plates 6. The parts are thus exceedingly simple in construction, and they may be readily assembled together or taken apart whenever desired for the purpose of inspection or repairs. The described construction enables the divided rings of the operating-levers to be readily slipped over the cylindrical bosses or hubs of the single-piece twister-wheel, af-

ter which the face-plates are applied and the studs or pins are swaged down upon the face-plates, thus firmly securing the face-plates to the twister-wheel and loosely mounting the operating-levers upon the bosses or hubs of said twister-wheel.

In connection with my improved twisting mechanism I employ a clamp 14, which is adapted to be carried by a post or upright 23 in a position to engage with the wire from which the stay is to be made and to also engage with the line-wire for the purpose of holding the stay-wire and line-wire in parallel rigid relation to each other, so that the stay-wire may be properly intertwined or wound around the line-wire by the operation of the twisting mechanism. This improved clamp is of exceedingly simple construction, but it has its elements arranged in a manner to firmly grip the two wires while holding them properly spaced apart. The clamp consists of a base 15, which is provided on one of its faces with a gripping-flange 16, and from the opposite or rear face of the base protrude the flanges 14^a, which engage with the sides of the post 23 and serve to position the clamp in proper relation to said post. The base of the clamp is further provided with an integral pivotal stud 17 and with an integral guide-stud 18. The pivotal stud is arranged on the clamp-base at one side of the gripping-flange 16 thereon and in substantially central relation thereto, while the guide-stud 18 is arranged beyond one end of the gripping-flange 16 in a position to form a space or throat through which the line and stay wires are adapted to pass.

The movable element of the clamp is in the form of a lever 19 with an eccentric head apertured to fit on the pivotal stud 17 of the clamp-base, and in one position of this lever the eccentric head thereof is adapted to provide a wide space or throat between its working face and the contiguous face of the gripping-flange 16; but in the other position of said lever its eccentric head is brought in such close relation to the gripping-flange that the wires are engaged and gripped firmly and tightly in position between said lever-head and the gripping-flange.

The twister-wheel is adjusted to bring the slot, as at 5, therein and the slots 6^a of the face-plates into alinement with the throats of the divided rings 9 on the levers 12 13 in order to position the parts for ready application of the twisting mechanism to the wires. The clamp is adjusted to have the line and stay wires fit in the spaces between its gripping-flange, the operating-lever, and the guide-stud, after which the lever is turned on its fulcrum to cause its head and the gripping-flange to engage with both line and stay wires, and thus maintain the same in fixed parallel relation to each other during the operation of twisting the stay-wire around the line-wire for a certain length of the latter.

The twisting mechanism is so applied to the wires that the line-wire occupies a position against or adjacent to the head of the radial slot 5, while the stay-wire is situated between the line-wire and the open part of the slot. The operator now depresses one lever to cause its feed-pawl to engage with the ratchet-body of the twister-wheel and give thereto a partial rotation, after which the other lever is depressed and the first-named lever is raised to its initial position, so that said second-named lever operates to impart a further turning movement to the twister-wheel and its face-plates. The levers are thus operated alternately to rotate the twister-wheel continuously in one direction, the feed-pawl on the descending lever being engaged with the ratchet-body of the twister-wheel, while the other feed-pawl on the ascending lever slips idly over the ratchet-faces of the twister-wheel. This operation is continued until the twister-wheel has made the desired number of revolutions and the stay-wire has been intertwined or cabled a sufficient number of times around the line-wire to unite the same thereto, and the machine is now detached, the stay-wire carried down to the next adjacent line-wire, the clamp adjusted to engage both line and stay wires, and the twisting mechanism again applied and operated to connect the stay-wire to the line-wire. This operation is continued until the stay-wire has been applied to the desired number of line-wires, and as the machine is simple in construction and its parts are not liable to get out of working order it may be operated very rapidly to apply the stay-wire to the line-wire in a very short time.

I attach especial importance to the construction of the twister-wheel with its cylindrical bosses or hubs in a single piece and to the employment of the face-plates which are attached or clamped to the bosses of the twisting-wheel in a manner to confine the divided rings of the operating-levers laterally between themselves and the ratchet-body of the twister-wheel. Such construction simplifies the machine and reduces the number of parts to a minimum, and the entire machine is also of simple and light construction with a view to reducing the weight thereof.

By my invention the stay-wires may be twisted uniformly on the line-wires in a manner to greatly strengthen the fence and impart thereto a desirable amount of resiliency that enables the wires to return to their proper positions when relieved of any pres-

sure that may be placed thereon by cattle, horses, or any objects.

It is evident that slight changes in the form and proportion of parts may be made without departing from the spirit or sacrificing any of the advantages of the invention.

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

1. In a fence-wire-twisting machine, a twister-wheel having the cylindrical bosses or hubs projecting from the ends of a ratchet-body and all made in a single piece of metal, in combination with independent operating-levers loosely mounted on said cylindrical bosses or hubs of the twister-wheel, face-plates clamped laterally against said bosses or hubs and serving to confine the operating-levers between themselves and the ratchet-body of the twister-wheel, and feed-pawls mounted on said operating-levers, substantially as and for the purposes described.

2. In a fence-wire-twisting machine, the combination of a radially-slotted twisting-wheel provided at its ends with cylindrical bosses or hubs, operating-levers mounted loosely on said bosses or hubs to turn independently thereon, face-plates clamped against the ends of the bosses or hubs, and gravity feed-pawls independently pivoted to the operating-levers and arranged to engage with the ratchet-body of said twister-wheel, substantially as and for the purposes described.

3. In a fence-wire-twisting machine, the radially-slotted twister-wheel provided at its ends with cylindrical bosses or hubs and with the protruding pins or studs, in combination with independent operating-levers having divided rings which fit loosely on said bosses or hubs of the twister-wheel, the radially-slotted face-plates united rigidly to the twister-wheel by the pins or studs thereof and adjusted to have their slots coincident with the slot of said twister-wheel, and the gravity feed-pawls mounted on the respective operating-levers and having the thumb-pieces arranged to be accessible at all times, substantially as and for the purposes described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ABRAHAM W. McFARLAND.

Witnesses:

GEO. E. REYNOLDS,
I. G. SIMS.