

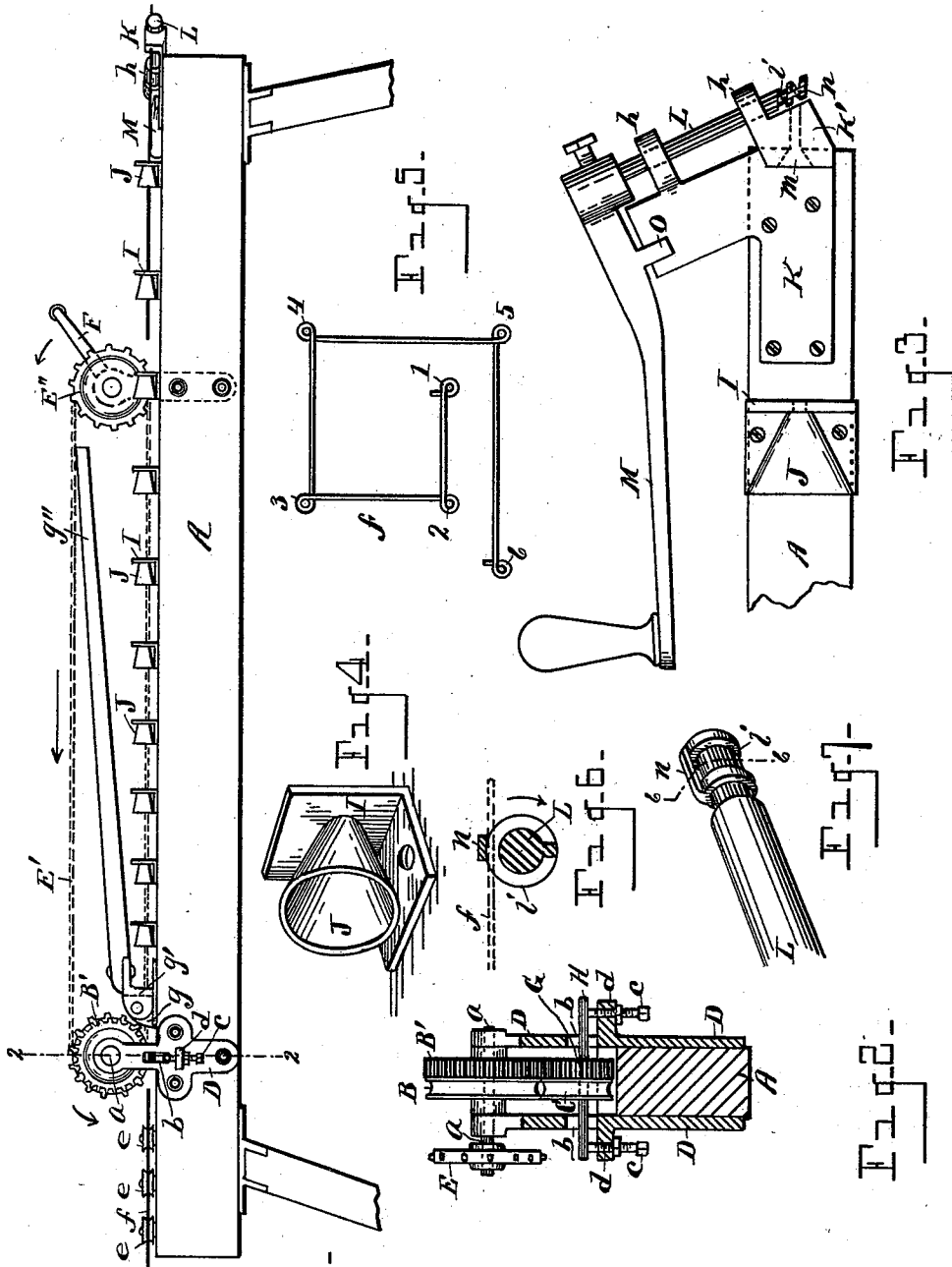
No. 613,358.

Patented Nov. 1, 1898.

E. W. CORNELL.
MACHINE FOR MAKING FENCE STAYS.

(Application filed Dec. 31, 1897.)

(No Model.)



WITNESSES

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EVAN W. CORNELL, OF ADRIAN, MICHIGAN.

MACHINE FOR MAKING FENCE-STAYS.

SPECIFICATION forming part of Letters Patent No. 613,358, dated November 1, 1898.

Application filed December 31, 1897. Serial No. 664,815. (No model.)

To all whom it may concern:

Be it known that I, EVAN W. CORNELL, a citizen of the United States, residing at Adrian, in the county of Lenawee, State of Michigan, have invented certain new and useful Improvements in Machines for Making Fence-Stays; 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.

15 This invention relates to a machine for making fence-stays for wire fences of the class in which the vertical stay is adapted to embrace the lateral wires of the fence in such manner as to bind them together; and the invention consists in providing means for forming the stay-wire into such shape as to enable it to be readily attached to the lateral wires of the fence by a very simple operation, which means will be hereinafter fully set forth, and pointed out particularly in the claims.

The object of the invention is to produce a stay-wire adapted to be attached to the lateral wires of a fence which shall be so formed as to enable said stay to be readily attached to said lateral wires without additional preparation, the arrangement being such as to enable the stay-wire to be quickly, perfectly, and economically made. This object is attained by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my improved machine. Fig. 2 is a vertical transverse section through the feeding mechanism as on line 2 2 of Fig. 1. Fig. 3 is an enlarged plan view of the rear end of the machine, showing the means for forming in said stay the partially-closed coils adapted to embrace the lateral wires of a fence. Fig. 4 is a perspective view of one of the funnel-guides which are employed to guide the wire through the machine and the vertical faces of which serve as stops against which the end of the stay-wire is placed and which determine the location of the respective loops or coils therein. Fig. 5 is a plan view of the stay-wire as

formed by this machine. Fig. 6 is an enlarged detail in section of the end of a shaft having a spiral way in the periphery thereof which serves to form the loops or coils in said stay-wire, showing the bridge across said spiral way which confines the wire therein, said view being taken as on line 6 6 of Fig. 7. Fig. 7 is a perspective view of the end of the shaft, showing the spiral way formed in the periphery thereof and the bridge crossing the channel of said way.

Referring to the letters and figures of reference, A designates the frame of the machine, which may be of any suitable construction and of such length as to permit of the formation of the desired length of stay. Mounted upon said frame is the operative mechanism of the machine, which consists of the feed-rollers B and C, respectively, of which the upper roller B is provided with a gear-wheel B', and with said gear is fixed upon a horizontal shaft a, which shaft is journaled at its opposite ends in the brackets D, which are secured to the opposite sides of the frame of said machine. Mounted upon one end of the shaft a is a sprocket-wheel E, adapted to receive a sprocket-chain, as shown by dotted lines E', which chain also passes around a second sprocket-wheel E'', supported in suitable bearings near the tail of the machine and adapted to be rotated by means of a crank F.

Meshing with the gear-wheel B is a pinion G, which is attached to or carries the lower feed-roller C, and which, together with said roller, is journaled upon a lower spring-shaft H, whose projecting ends pass through and are confined in the vertical slots b, formed in the sides of the brackets D, the ends of said shaft H being supported on the adjusting-screws c, which are threaded in the projecting ears d, formed on said brackets. By means of the adjusting-screws the lower feed-roller may be forced upward, so as to tightly confine the wire between the grooved faces of said feed-rollers, while the spring of the shaft H will permit of a slight vertical movement of the lower roller to accommodate any inequality in the wire.

Mounted upon the forward end of the machine is a series of small guide-rollers e, between which the stay-wire f is adapted to

pass before entering the feed-rollers and which are so set as to effect a straightening of said wire in its passage therethrough.

Located directly in the path of the feed-rollers is a shear of ordinary construction, which consists of a fixed plate *g*, having an aperture through which the wire *f* passes and to which is pivoted a shear-plate *g'*, through which the wire also passes, and which is provided with a cutting edge on a line with the aperture in the plate *g*, said shear-plate being provided with a long lever *g''*, which extends toward the tail of the machine in reach of the operator manipulating the crank *F*, whereby by a depression of said lever the stay-wire may be severed by said shear in a manner well understood.

Mounted upon the bed of the machine in line with the feed-rollers is a series of guides, through which the wire is carried by said rollers. These guides consist of rectangular plates *I*, secured to the bed of the machine and provided with a funnel *J*, whose small end communicates with an aperture leading through the vertical face of said plate and through which the wire of the stay is adapted to pass. These funnels receive the end of the wire in succession as it is fed through the machine by the feed-rollers and guide said wire through the apertures in the vertical face of the plates *I*, whereby said wire, although somewhat bent, is caused to pass in a straight line through the machine and is properly presented to the spirally-grooved shaft at the tail of the machine, where the series of coils which are adapted to embrace the lateral wires of the fence are formed in said stay-wire.

Secured to the bed of the tail of the machine is an angular plate *K*, having the projecting bearings *h*, in which the shaft *L* is freely supported, so as to rotate and slide longitudinally. Upon one end of said shaft is a crank *M*, by means of which said shaft may be rotated. Formed on the opposite end of said shaft is a spiral groove *i*, which traverses the circumference of said shaft and through the medium of which the coils in the stay-wire which embrace the lateral wire of the fence are formed.

Formed in the raised portion *K'* of the plate *K* is a funnel-shaped aperture *m*, which passes therethrough, as shown by dotted lines in Fig. 3, the outer end of said aperture registering with the spiral channel *i* in the end of the shaft *L*, which shaft is supported in its bearings at an angle to the line of said aperture. The initial end of the stay-wire *f*, after passing through the last guide, enters this aperture *m* and is guided thereby to the spiral groove *i* in the end of said shaft *L*. To confine the wire within said groove, a bridge *n* is formed across said spiral groove, under which the end of the wire is confined, as clearly shown in Fig. 6, so that by a rotation of said shaft through the medium of the crank *M*, which makes nearly one complete revolution,

the wire of the stay is wound within said spiral groove, forming a partially-closed coil 1 in the end thereof. After the formation of this coil the crank is reversed to the original position, as shown in Fig. 3, at which point said crank is arrested by the stop *o*, projecting therefrom, which engages the projecting plate *K*. This movement frees the wire from the spiral groove in the end of said shaft and leaves said wire projecting through said groove under the bridge *n* with the coil 1 formed in the end thereof. The wire is then drawn through the machine to a point where it is desired to form a succeeding coil 2, when the crank *M* is again operated to form said coil, the formation of which leaves the end of the wire of the stay standing at right angles to the body or remaining portion thereof. The operation is repeated until coils 3, 4, 5, and 6 are formed, or as many coils are formed in the stay-wire as there are lateral wires in the fence. The formation of each coil causes the straight sections of the stay to stand at right angles, whereby when the stay is completed it describes a quadrangular figure, as shown in Fig. 5, whose straight sections are united by partially-closed coils adapted to embrace the lateral wires of a fence. The attachment of this stay to the lateral wires of the fence has been described in an earlier application by me, Serial No. 633,241, and need not be entered into in this case.

To provide for spacing the coils in the stay-wire the requisite distance apart, the guide-plates *I* are employed, which are mounted upon the bed of the machine at varying distances apart, as shown in Fig. 1, the distance between said plates determining the distance between the coils in the stay-wire. After forming the initial coil in the end of the wire the severed wire, which forms the stay, is drawn through the guide-plate nearest the shear, when its end is backed against said plate, which serves as a stop therefor and determines the point where the second coil shall be formed. After the formation of the second coil the wire is drawn through the succeeding guide-plate and its end again backed against said plate, when the next coil is formed, and so on the operation is repeated, the space between the series of guide-plates being varied according to the distance between the lateral wires of the fence.

It will be understood that after the formation of a stay through the operation of placing the series of partially-closed coils therein a succeeding stay is run through the machine by a manipulation of the crank *F*, when said stay-wire is again severed by the shear, and the operation of forming the coils therein repeated.

The object in placing the crank *F* near the tail of the machine is to enable said crank, through which the feeding mechanism is operated, as well as the crank *M*, to be within easy reach of the operator standing at the tail of the machine.

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

1. In a machine for forming stay-wires for fences, the combination with the feeding mechanism, a series of guides in line therewith through which the stay-wire is adapted to pass, and means for forming a series of loops or coils in said stay-wire.

2. In a device for forming stay-wires for fences, the combination with the feeding mechanism, means for placing successive coils or bends in said wire, and a series of guides and stops adapted to permit of the passage of the wire therethrough and spaced from one another to form stops for the end of said wire to determine the distance between the coils formed therein.

3. In a device for forming stay-wires for fences, the combination with the feeding mechanism, a series of guides for directing the wire standing in line with said feeding mechanism, the shaft supported to rotate, said shaft having a spiral way in the end thereof adapted to receive said wire, and means for retaining said wire in said way.

4. In a device for forming stay-wires for fences, the combination with the feeding mechanism, a series of guides for directing the stay-wire through the machine, a shaft at the end of said machine supported to rotate, said shaft having a spiral way in the end thereof adapted to receive the end of said stay-wire, and a projection from said way adapted to engage the end of said wire.

5. In a device for forming stay-wires for fences, the combination with the feeding mechanism, a series of guides for directing the stay-wire through the machine, a shaft at

the end of the machine supported to rotate, said shaft having a spiral way in the end thereof adapted to receive the end of said wire, and a bridge crossing said spiral way under which the end of the wire is adapted to be confined.

6. In a device for forming stay-wires for fences, the combination with the feeding mechanism, a series of guides for directing the wire through the machine, a shaft at the tail of the machine supported to rotate, said shaft standing at an angle to the line of said stay-wire and having in the end thereof a spiral way adapted to receive the end of said wire, and means for engaging the end of said wire to retain it in said way.

7. In a machine for forming stay-wires for fences, the combination with the guiding mechanism, of the feeding mechanism consisting of engaging gears carrying the peripheral grooved pulleys, the lower gear and pulley mounted on a vertically-movable spring-shaft, and means for forcing said shaft upward to confine the wire between said grooved pulleys.

8. In a device for forming stay-wires for fences, the combination with the rotary shaft having a way therein, means for directing the end of the wire into the way in said shaft, and a projection extending from the side of said way under which the wire is adapted to be engaged to retain it therein.

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

EVAN W. CORNELL.

Witnesses:

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F. E. PRIDDY.