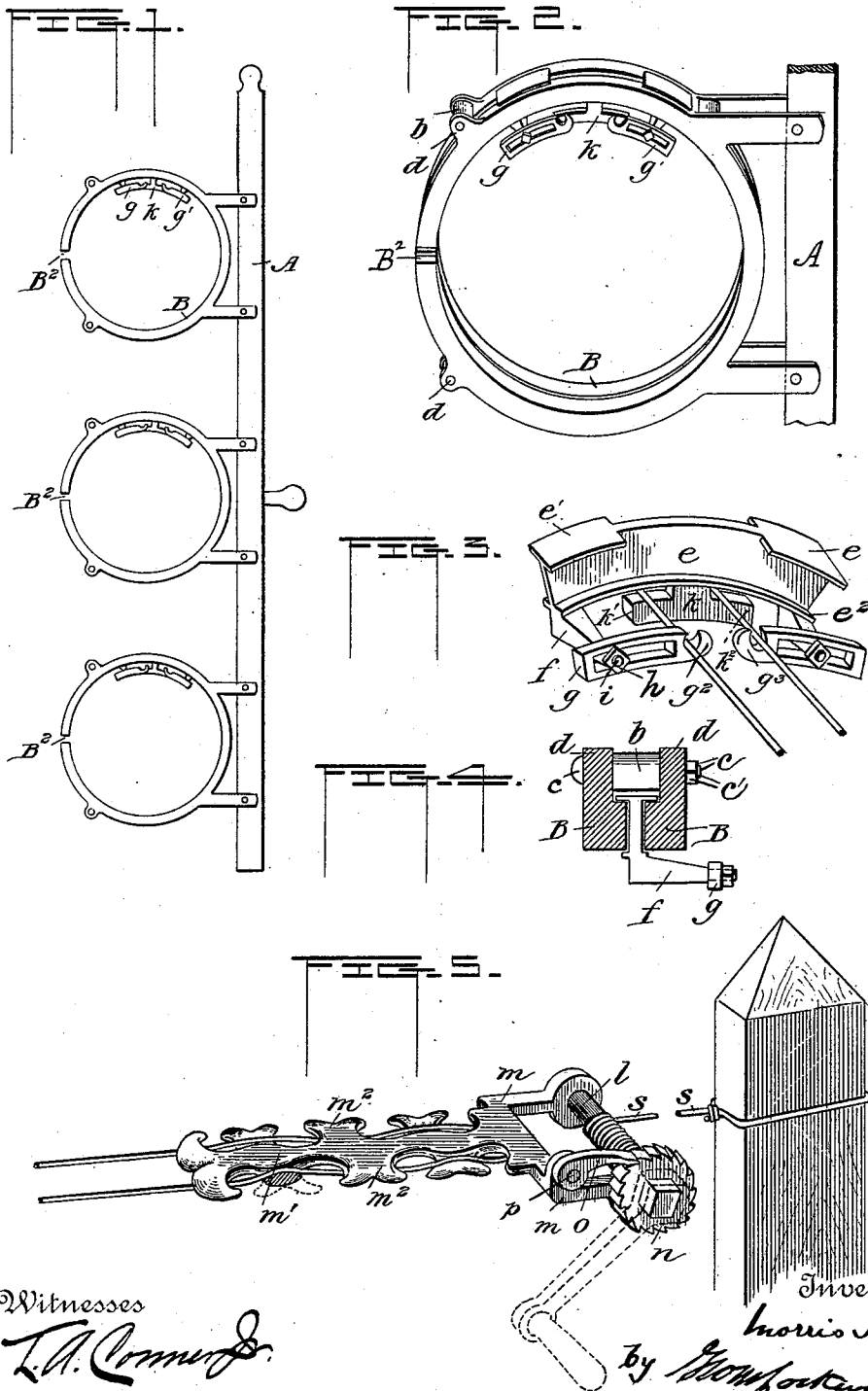


(Model.)

M. HAYS.
HAND FENCE MACHINE.

No. 472,167.

Patented Apr. 5, 1892.



Witnesses

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UNITED STATES PATENT OFFICE.

MORRIS HAYS, OF MONMOUTH, ILLINOIS.

HAND FENCE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 472,167, dated April 5, 1892.

Application filed March 30, 1891. Serial No. 387,062. (Model.)

To all whom it may concern:

Be it known that I, MORRIS HAYS, a citizen of the United States, residing at Monmouth, in the county of Warren and State of Illinois, have invented certain new and useful Improvements in Hand Fence-Machines for Wiring Wood Fences; 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 of reference marked thereon, which form a part of this specification.

This invention relates to improvements in hand fence-machines for wiring wood fences; and it has for its objects the provision of an improved wire-twisting device traveling upon and between guide-rings attached to a suitable support and the more perfect regulation of the tension upon the fence and stay wires than has heretofore been attained.

Other objects and advantages of the invention will appear in the following description, and the novelty thereof will be particularly pointed out in the claims.

The invention is illustrated in the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a side elevation of a fence-machine adapted to twist three sets of wires. Fig. 2 is an enlarged perspective view of one of the wire-twisting devices. Fig. 3 is a perspective view of the wire-twister. Fig. 4 is a detail view, partly in section, showing the wire-twister and guide-rings. Fig. 5 is a perspective view showing the tension device in operative position.

Like letters of reference refer to like parts throughout the several views.

A represents an upright of suitable material, and secured thereto or made integral therewith are several pairs of guide-rings B B. The guide-rings of each pair are held at a suitable distance apart by means of washers b, secured in position by pins or bolts c, passing through ears d or similar projections from the peripheral surfaces of said guide-rings, and nuts c' or other suitable fastening devices may be used to hold the guide-rings in proper position with relation to each other, so that the wire-twister may work freely be-

tween them and travel in a plane parallel to the planes of said guide-rings. This wire-twister is constructed as follows: The flanges e' and e², formed integral with the segment e, Fig. 3, travel upon the inner and outer peripheral surfaces of the guide-rings, the ears d being considerably thinner than the guide-rings in order to enable the flanges e' to travel freely along the peripheries thereof, as shown in Fig. 4. The arms f, formed integral with the segment and its flanges and at right angles thereto, are squared at their outer ends for the reception of wire-guides g g'. These wire-guides are slotted longitudinally through almost their entire length and can be readily adjusted at any desired position upon the squared ends of the arms f by means of nuts h and screws i in order to allow for the size of the material used in the construction of the fence. The inner ends of the wire-guides are hooked, as at g² g³, to receive the fence-wires and to guide the wire over the wire-carrier k. These hooks serve, also, to prevent the slipping of the fence-wires and the formation of knots or short twists in the same. The wire-carrier is made, preferably, in the shape of a cleat, as shown, and is formed integral with the segment, its flanges, and the arms f. Its position is approximately midway between said arms and in the plane of the segment.

The tension device which I use in connection with the wire-twisting apparatus is shown in Fig. 5. The spindle l, mounted in the forks m m, carries a ratchet-wheel n near one fork. A ratchet o, fastened to said fork by the pin p, engages with the teeth of said ratchet-wheel and prevents the unwinding of the stay-wire s, which is wound around said spindle and passes through a hole therein, the slack of the wire being taken up by coiling it upon the spindle. The arm m', attached to or formed integral with the forks m m, has upon its sides rows of studs or lugs m² m³, lying in the same horizontal plane. The heads of these lugs are larger than the necks in order to keep the wires in place when woven among said lugs, and the distance between the lugs is sufficient to admit wires of different sizes and to prevent any unnecessary bending of such-wires. These lugs are rounded and grooved alternately on their opposite faces to form elliptical cross-sections in line with the fence-wires

and to still further reduce the danger of short bends forming in said wires.

The operation of my machine is as follows: As many pairs of wires are first secured to the starting-post as are desired, and the wires are woven among the lugs of the tension devices, stay-wires being secured to the spindles l , as before described, and to a distant post. The proper degree of tension having been obtained by winding the stay-wires upon the spindles, the operator grasps the handles A' and A^2 and inserts the wires through the unobstructed openings B^3 in the guide-rings, passing one wire of each pair through the hooks g^2 of the wire-guides and over the arms k' of the wire-carrier and the other wire over the hooks g^3 and the arms k^2 . It will be apparent that if the operator then draws the apparatus toward himself the wires will carry each of the wire-twisters from the position shown in Fig. 1 to a point near the openings B^2 . By elevating the apparatus sufficiently the wire-twisters are then carried to a point opposite their first position and the guide-rings will have been moved through an arc of one hundred and eighty degrees. If the operator then pushes the apparatus from him, the wire-twisters will take up positions opposite the openings B^2 and the guide-rings will have moved through an arc of two hundred and seventy degrees. If the apparatus is then lowered, the wire-twisters will return to the position shown in Fig. 1 and the guide-rings will have made a complete turn of three hundred and sixty degrees, and each pair of wires will have been twisted once. Although I have described four movements as being necessary to bring about the twisting of each pair of wires, it is evident that there are not, strictly speaking, four distinct movements, but that the movement of the apparatus is really a circular one in a plane in line with the guide-rings, as it is obvious that the guide-rings must move in substantially a circle about the fence-wires. One twist having been given to each pair of wires, a picket is inserted between them, and a twist in the opposite direction is made by reversing the movement of the apparatus so that the guide-rings will turn in a direction opposite to that before described—that is to say, the operator will first push the apparatus from him, then lower it, then draw it toward himself, and finally raise it. As many twists as desired can be given each way. The picket will then be held securely in place between the twists in the wires. A second picket is then inserted and the operations above described are repeated. It will be evident that as the twisting of the wires is continued the tension on the wires will gradually become greater, owing to the weight of the pickets and the shortening of the wires, and that the said wires will gradually slip through the lugs m^2 of the tension device and preserve the required degree of tension. This may be

regulated either by increasing or decreasing the number of said lugs, according to the character of the materials of which the fence is to be made, or by weaving the wire over and under the lugs singly or under and over two or more at a time. The adjustment of the wire-guides g g' toward and from each other by means of the nuts h and the screws i to permit of the insertion between the wires of thin or thick pickets facilitates greatly the work of the operator.

I do not wish to be understood as limiting myself to the exact details of construction shown and described, as it is evident that they may be modified without departing from the spirit of the invention. For instance, the flanges e' of the wire-twisters may work in grooves in the opposing plane faces of the guide-rings. The wire-carrier k and the arms f might also be removed and the wire-guides adjustably secured to the inner peripheries of the segments.

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

1. A hand fence-machine comprising guide-rings secured in pairs to a suitable support and a wire-twister for each pair of guide-rings, adapted to travel circumferentially around and between and in a plane parallel to the planes of the same.

2. A tension device for hand fence-machines, having lateral projections from each side of the body at one end thereof, said projections being rounded and grooved alternately on their opposite faces to form elliptical cross-sections in line with the fence-wires and at the other end thereof having means for securing a stay-wire.

3. In a wire-twister for hand fence-machines, a pair of wire-guides independently adjustable upon arms extending at right angles to the body of said twister and having their adjacent ends hooked for the reception of the wires, substantially as described.

4. In a hand fence-machine, the combination, with a pair of guide-rings B B , of a wire-twister consisting of the segment e , flanged at e' and e^2 , wire-carrier k , arms f , and the adjustable wire-guides secured to the ends of said arms, substantially as described.

5. A tension device consisting of the body portion carrying the two rows of lugs m^2 , rounded and grooved alternately on their opposite faces to form elliptical cross-sections in line with the fence-wires, and forks m m , spindle l , ratchet-wheel n , ratchet o , secured to one of the forks by the pin p , and a crank for turning the spindle, substantially as described.

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

MORRIS HAYS.

Witnesses:

SAM. S. HALLAM,
JOSEPH DEVORE.