

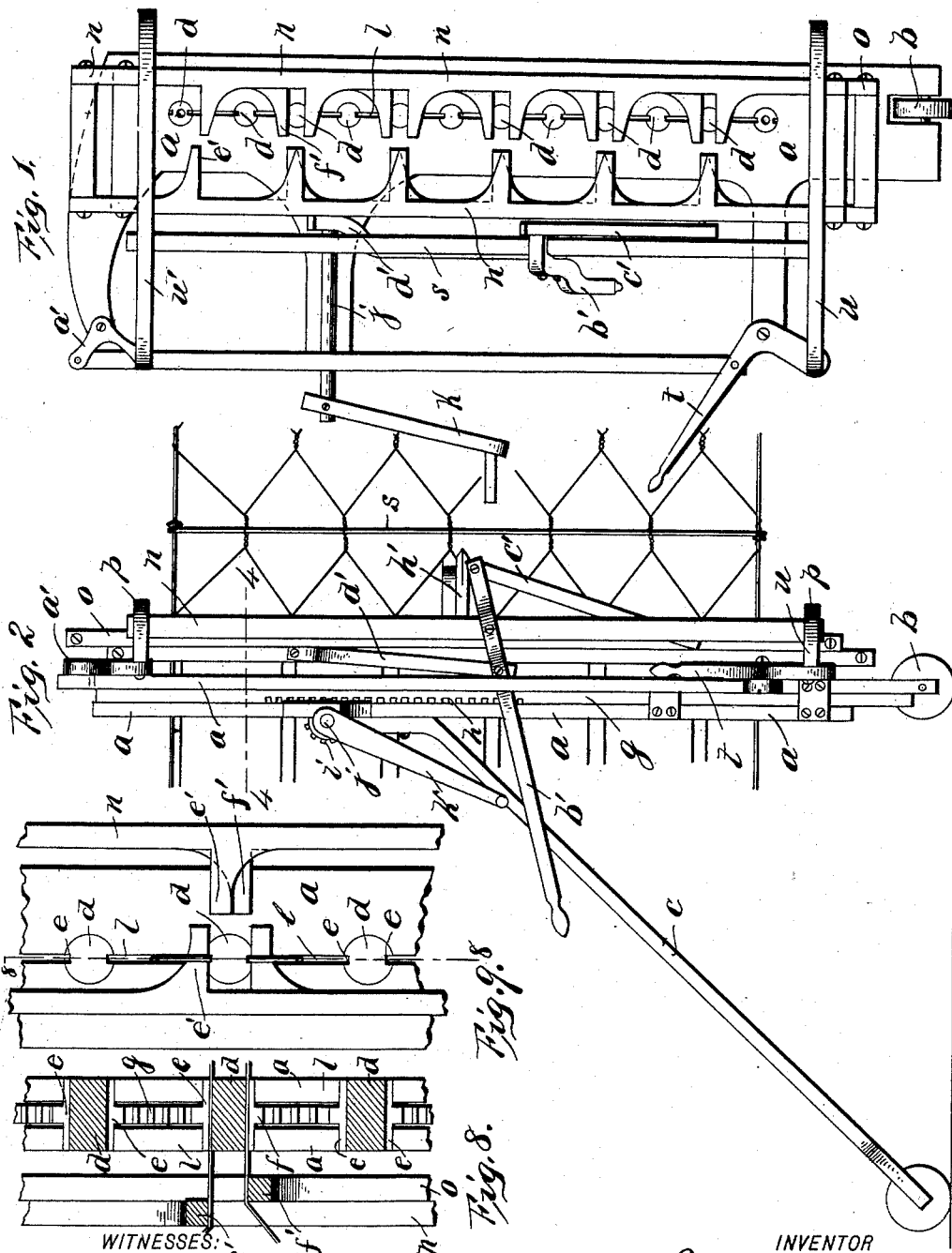
(No Model.)

2 Sheets—Sheet 1.

J. P. HIATT.
WIRE FENCE MACHINE.

No. 522,899.

Patented July 10, 1894.



WITNESSES:
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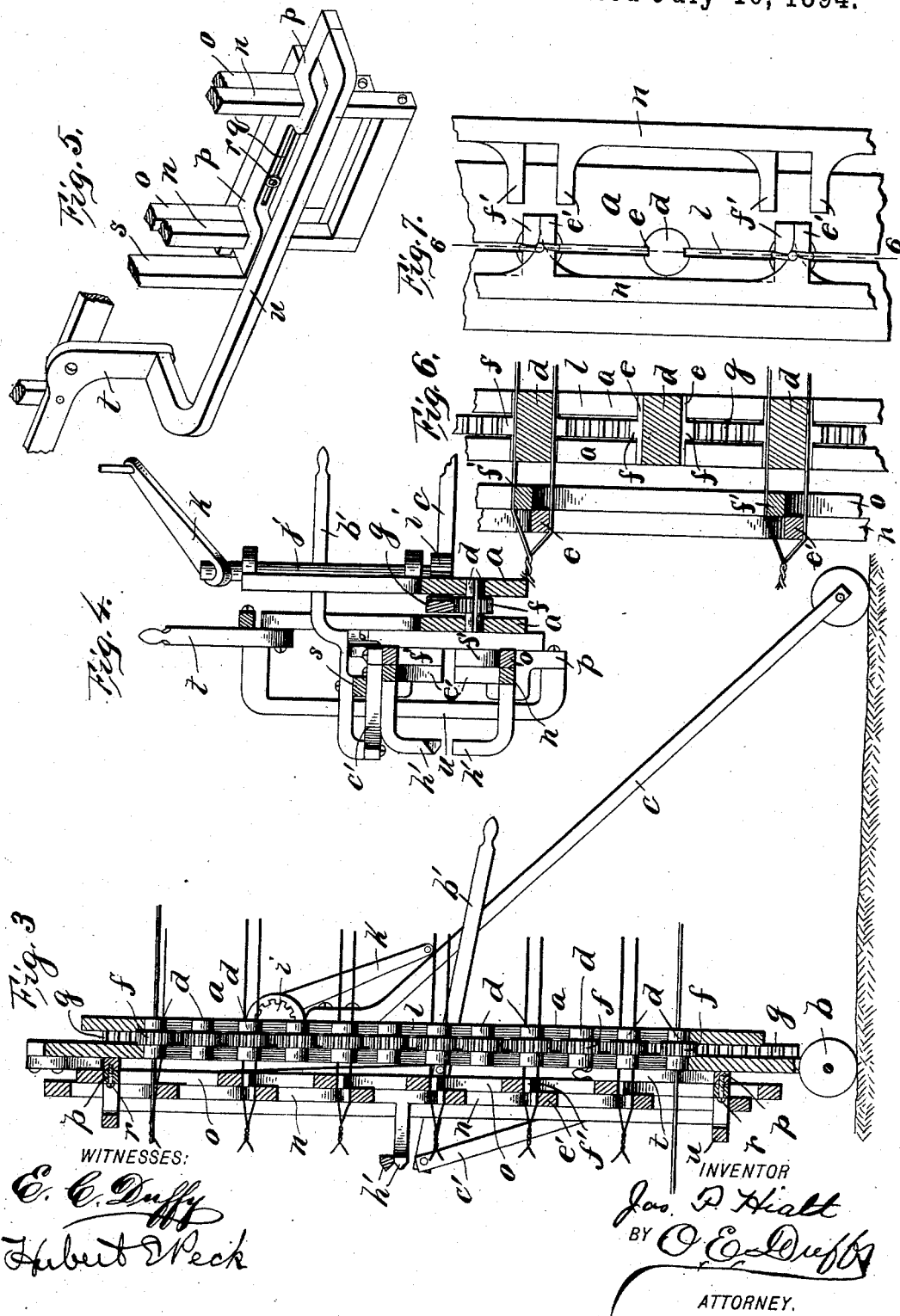
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UNITED STATES PATENT OFFICE.

JOSEPH P. HIATT, OF RICHMOND, INDIANA.

WIRE-FENCE MACHINE.

SPECIFICATION forming part of Letters Patent No. 522,899, dated July 10, 1894.

Application filed March 8, 1894. Serial No. 502,822. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH P. HIATT, of Richmond, in the county of Wayne and State of Indiana, have invented certain new and useful Improvements in Fence-Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which 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 part of this specification.

This invention relates to certain improvements in fence weaving machines.

The object of the invention is to provide an improved machine for constructing or weaving fences composed of wire netting, exceedingly simple and durable in construction and composed of a minimum number of parts and which can be easily and quickly operated without requiring the services of a skilled mechanic.

The invention consists in certain novel features of construction and in combinations and arrangements of parts more fully and particularly described and pointed out hereinafter.

Referring to the accompanying drawings;—

Figure 1 is an elevation of the rear face of the machine showing the shifting frames swung to the left with the right hand fingers arranged on opposite sides of the weft wires with the parts in the position they assume just after the twist has been formed. Fig. 2 is a side elevation with the parts in the same positions. Fig. 3 is a vertical central longitudinal sectional view, the frames being shown shifted to the right, with the left hand fingers between the pairs of wires after the twist has been made by the parts arranged as in Figs. 1 and 2, and the machine moved forward. Fig. 4 is a cross sectional view on the line 4—4, Fig. 2. Fig. 5 is a detail perspective showing the lower carrier of the shifting frames, also showing portions of said frames and adjacent parts. Fig. 6 is a detail vertical section enlarged taken on the lines 6—6, Fig. 7, showing the parts in the same positions as shown in Fig. 3. Fig. 7 is a detail rear elevation showing the parts in the positions shown in Fig. 6, wherein the left

hand fingers have just been shifted to the right and passed between the wires twisted between the right-hand fingers, this figure showing the parts in the position before the shifting frames have been thrown in opposite vertical directions to separate the wires and carry to adjacent twist-ers. Fig. 8 is a detail vertical section, enlarged, taken on the lines 8—8, Fig. 9, showing the parts after the frames have been shifted vertically in opposite directions, so that the left-hand fingers separate the wires and carry them through the slots in the frame into the adjacent twist-ers. Fig. 9 is a detail rear elevation showing the parts in the position of Fig. 8.

In the drawings the reference letter *a* indicates a vertical frame usually having a roller *b*, at the lower end thereof to run on the ground, and a forwardly extending brace *c*, from the upper portion thereof provided with a roller to travel on the ground and assisting in supporting the device and removing the strain from the wires. This frame preferably consists of two upright longitudinal parallel plates secured together a suitable distance apart.

d, are the wire twist-ers journaled transversely in said plates in aligned round apertures extending through the plates. Each twister preferably consists of a round block or cylinder having two longitudinal wire receiving grooves or notches *e e*, extending the length thereof on diametrically opposite sides of each twist-er. Each twister at or about its center is also provided with the exterior gear wheel *f*, fitted between the plates of the frame.

All of the twist-ers are simultaneously revolved by means of the rack bar *g*, slidably confined between the plates and meshing with the gears of all the twist-ers. On its rear side this rack bar is provided with the gearing *h*, with which the pinion *i*, meshes. This pinion is rigid on the horizontal drive shaft *j* extending laterally to one side of the machine and mounted in a suitable bracket from the upright frame. The outer end of this shaft can be provided with a suitable handle *k*, whereby the shaft can be rotated in opposite directions to raise and lower the rack bar and thereby revolve the twist-ers in opposite directions.

A suitable number of horizontal twist-ers are employed in a vertical series, and the two plates composing the upright frame are provided with vertical slots 1, between the open-
 5 ings containing the twist-ers so that the wire receiving notches in the twist-ers can register with said slots and the wires can be passed through the slots between adjacent twist-ers for the purpose hereinafter described.

10 The present machine is designed to weave a fence composed of wire netting on top and bottom selvage wires. The top and bottom twist-ers of the series of twist-ers *d* have each a central concentric bore for the passage of
 15 the selvage wire. This wire netting is formed from a series of parallel wires stretched between and parallel with the selvage wires so that a single wire is located between each twister and the adjacent twist-ers.

20 Suitable means are provided to shift the wires between the twist-ers in forming the meshes of the wire netting. These means preferably consist of two frames *n, o*, arranged at the rear side of the machine. These frames
 25 are laterally shiftable together and vertically movable in opposite directions and the frames are arranged longitudinally of the main frame and opposite the rear ends of the twist-ers therein. Each shifting frame consists of the
 30 two parallel vertical bars arranged on opposite sides of the vertical plane in which the twist-ers are located and extending above and below the series of twist-ers and connected at their ends by cross bars. The two frames are
 35 preferably of the same dimensions and are arranged close together so that their side bars slide one on the other.

The two frames are held in position by the upper and horizontally arranged carriers *p, p*,
 40 having the transverse openings in which the sides of the frame are confined to slide vertically. These carriers slide horizontally to shift the frames together. The main upright frame can be provided with ways for the car-
 45 riers, and the carriers can have elongated slots *q*, through which headed pins *r*, rigid with the frame extend. These two carriers can be rigidly secured by means of a vertical rod *s*.

Suitable means are provided for shifting
 50 the frames laterally such as a vertically rocking hand lever *t*, fulcrumed to a lateral extension from the upright frame and provided with a lateral end pivotally connected with the lower carrier by a link *u*. A bell crank
 55 lever *a'* is mounted on a rigid extension from the upper end of the frame and one arm of said lever is connected to the said lever *t*, on the opposite side of the fulcrum from link *u*, and the other arm of said bell crank lever is
 60 connected by the link *u'* with the upper carrier. It will thus be observed that when the hand lever is swung up the two carriers and their frames will be swung to the left and when the said lever is swung down the two shifter
 65 frames will be swung to the right.

Any suitable means can be provided to move the two frames vertically in opposite

directions, such as a vertically swinging hand lever *b'* extending forwardly and between its ends fulcrumed on the bar *s*, and pivotally
 70 connected from points on opposite sides of its fulcrum with the two frames by the links *c' d'* so that when said hand lever *b'* is swung the two frames will be moved in opposite di-
 75 rections.

The outer frame *n*, is provided with the fin-
 80 gers *e'* extending inwardly from its side bars. The inner frame is also provided with corresponding series of fingers *f'*. The distance between the fingers is usually the same as the
 85 distance between two twist-ers, and each finger does not extend beyond a line passing through the longitudinal center of the two frames.

The fingers on opposite sides of each frame are arranged approximately opposite each
 90 other so that their straight sides will be approximately in the same plane. The fingers on the same side of a frame face in the same direction while those on the opposite side of the same frame face in the opposite direction.
 95 The fingers in adjacent sides of the two frames also face in opposite directions.

At or about the central portion of the outer frame *n*, the two gages *h' h'* project outwardly from opposite sides thereof and have inturned
 100 ends. These gages are formed to gage the size of the mesh and are so arranged that the one in action always comes opposite an idle twister. Each gage is equal in length to one
 105 half the length of a completed mesh, and in using the present device wherein twelve twist-ers are employed eleven weft wires should be strung an equal distance apart and between the two selvage wires. The machine
 110 is placed on these wires with the two selvage wires passing through the top and the bottom twist-ers and the weft wires passing between the twelve twist-ers. The machine is now moved up to the end post until one of the
 115 gages *h'* engages the post or other support at which the fence is to begin, the parts being arranged in the position shown in Fig. 1 with the shifting frames thrown to the left and the
 120 weft wires in opposite sides of every alternate twister. Each pair of weft wires pass between the flat face of a pair of fingers on the right hand side of the shifting frames. The fingers on the opposite side of the frame
 125 are arranged one over the other and opposite the space between the opposite separated fin- gers and opposite the center of each twister containing wires. The twist-ers are now op-
 130 erated to twist the weft wires together forming in this instance a vertical series of six twists as shown. The twist at one end being around one of the selvage wires. The machine is now moved forward a short distance and the hand lever controlling the side shift of the frames is thrown down thereby throwing the left hand fingers that are closed together
 135 between each pair of weft wires while the right hand fingers pass to the right beyond the plane of the same. This movement brings the left hand gage into the plane of the wires.

The hand lever controlling the separating movements of the frame is then thrown up thereby throwing the two frames in opposite directions approximately the distance between the centers of the two twisters, thereby spreading the wires and moving the wires of each pair in opposite directions through the slots in the upright frame into the wire receiving notches of the adjacent twisters which were idle in the previous twisting operation. In this position the pairs of wires are located between the straight adjoining edges of the left hand fingers and the right hand fingers are arranged in pairs one on the other and opposite the left hand separated fingers in the reverse position from that previously described. The machine is now moved back until the left hand gage rests in the corner of a mesh made in the previous operation and in a plane a distance equal to the distance between two twisters above or below the mesh previously engaged by the right hand gage, the gage being properly spaced. The twist-ers are then operated to twist the wires in the opposite direction to the twist previously made. The machine is then moved forward a suitable distance and the frames shifted to the right to throw the weft wires onto the opposite sides of the pairs of overlapping fingers which are then separated vertically to spread the wires into the adjacent twisters as before described.

This machine is particularly adapted for weaving a netting fence having the vertical stay rods connected at their ends to the sel- vage wires and woven into the netting, the weft being twisted in one direction on one side of each rod and then twisted in the op- posite direction on the other side of each rod. A stay rod *s*, is seen in such position in Fig. 2. By this arrangement the weft wires do not become unduly twisted in front of the ma- chine and a fence of great strength is pro- duced and one that is very economical and durable in construction and very easily and quickly constructed with my machine. It should also be noted that this machine does not have to carry spools or coils of weft wires and that it is light and simple in construction and easily handled and composed of a mini- mum number of parts for the purpose in- tended.

It is evident that various changes might be made in the forms, constructions, and ar- rangements of parts described without de- parting from the spirit and scope of my in- vention, hence I do not wish to limit myself to the exact construction herein set forth.

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

1. The portable fence weaving machine hav- ing adjacent twisters, provided with the oppo-

site notches, the frame having the vertical slots between the twisters extending com- pletely through the frame to receive the line wires passing through the machine and per- mit shifting thereof between the twisters, and means substantially as described, independ- ent of the twisters in the frame and arranged at the rear side of the machine to shift the line wires between the twisters, for the purpose set forth.

2. A fence weaving machine having a series of twisters, a frame containing the twisters and provided with slots between the twisters through which the line wires pass, and where- by they can be spread and moved between the twisters, and a series of shifters arranged behind the twisters and independent thereof to directly engage the line wires and shift the wires from one set of twisters to another set, as described.

3. In a fence weaving machine, the combi- nation of an upright frame, twisters therein, and the two laterally and vertically movable shifting frames at the rear side of said frame independent of the twisters and having fin- gers to directly engage and separate and shift the wires, substantially as described.

4. A fence weaving machine having the se- ries of wire spreading fingers arranged to di- rectly engage and spread the wires and mov- able laterally in the same direction and ver- tically in opposite directions, and vertically and laterally movable carriers for said fingers provided with operating means, substantially as described.

5. A fence weaving machine having the lat- erally and vertically movable carriers pro- vided with wire spreading fingers arranged to directly engage and spread the wires, and means, substantially as described, for moving said carriers laterally in the same direction and vertically in opposite directions.

6. A fence weaving machine having the movable wire shifting frames, independent of the twisters, each frame having a rearwardly and inwardly extending mesh gage as set forth.

7. A fence weaving machine having the two parallel shifting frames, each provided with the fingers extending inwardly from opposite sides, substantially as described, laterally movable carriers for said frames in which they are vertically movable in opposite di- rections, and levers for moving said frames in opposite directions, and for moving the car- riers laterally.

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

JOSEPH P. HIATT.

Witnesses:

HUBERT E. PECK,
C. M. WERLE.