

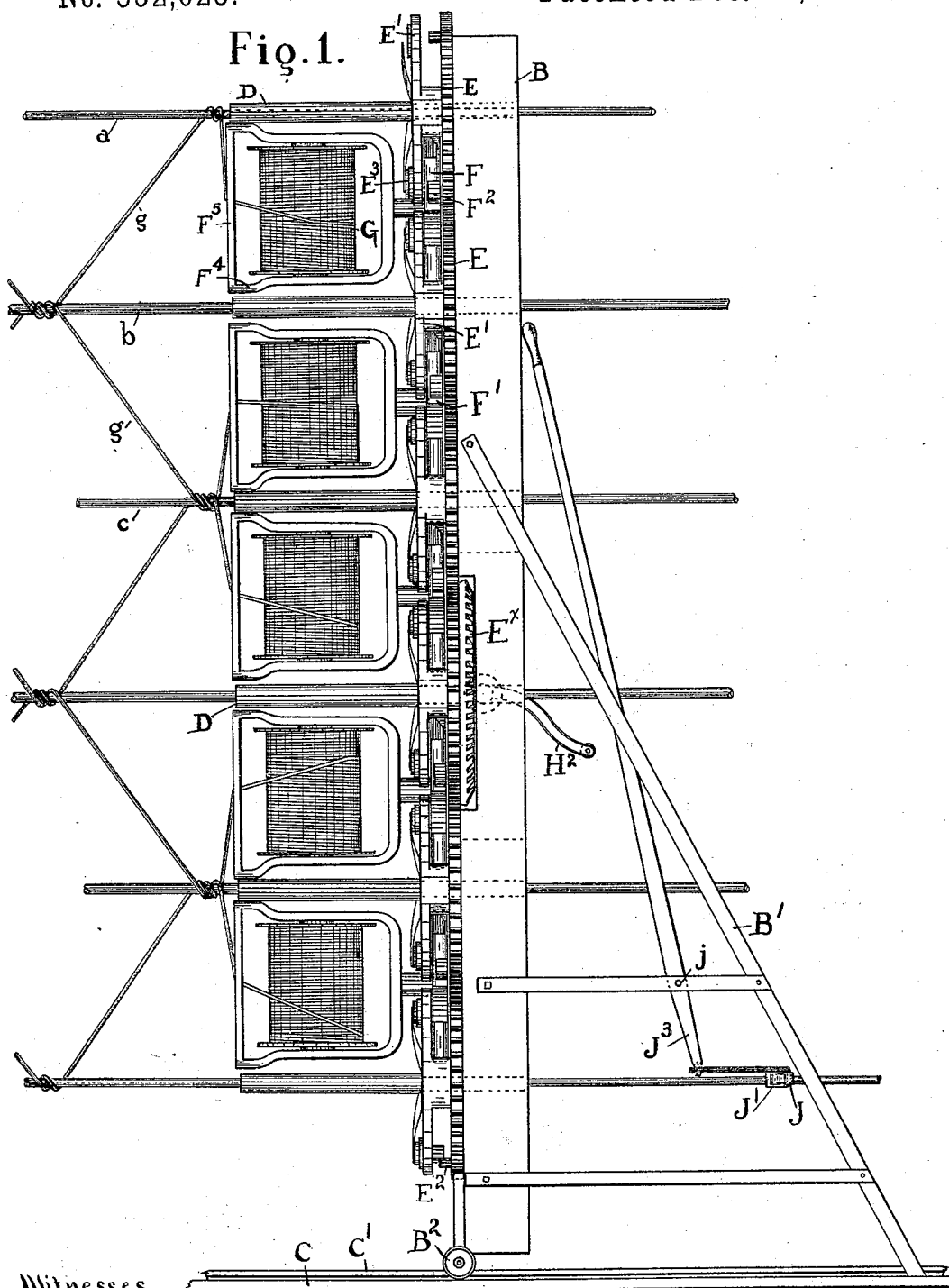
(No Model.)

3 Sheets—Sheet 1.

W. D. WHITNEY.
WIRE FABRIC MACHINE.

No. 552,025.

Patented Dec. 24, 1895.



Witnesses.

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Inventor.

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his Attys

(No Model.)

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Fig. 2.

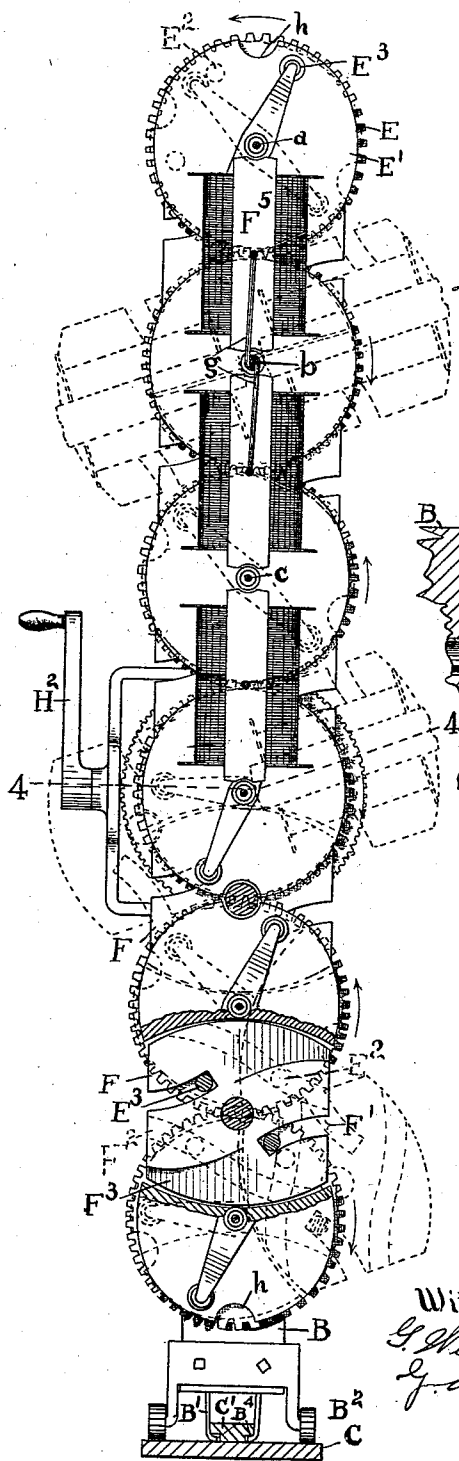


Fig. 5.

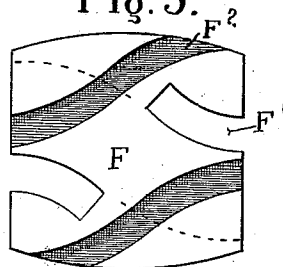


Fig. 3.

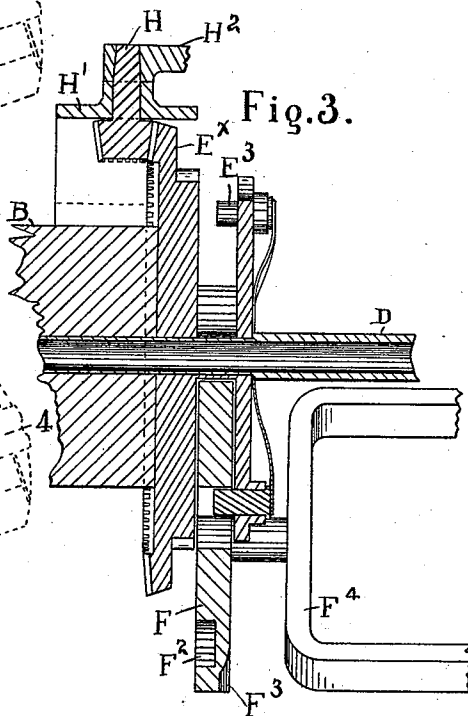
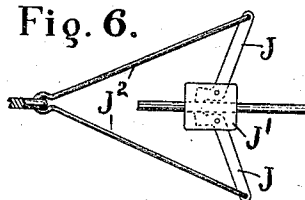


Fig. 6.



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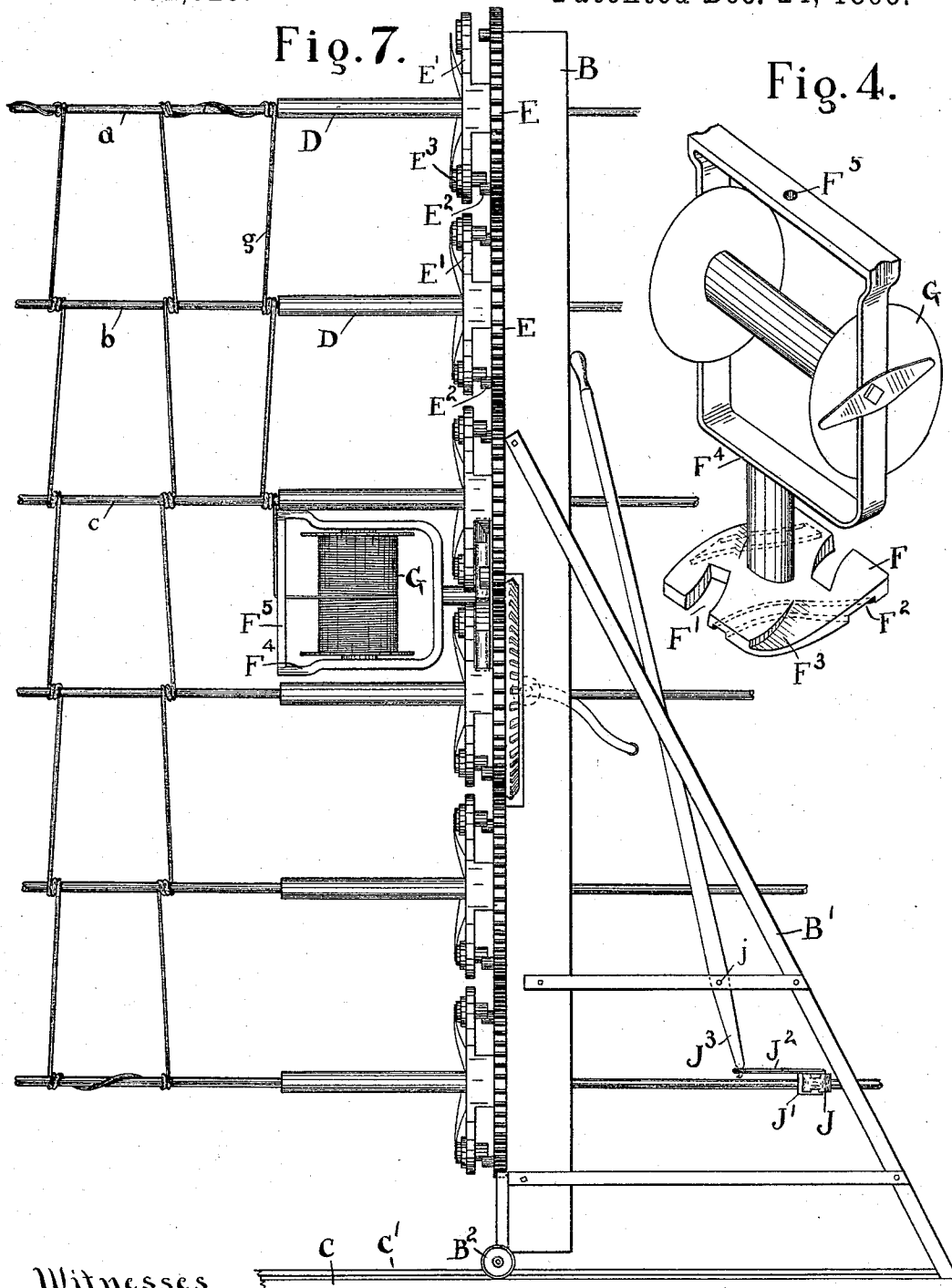
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UNITED STATES PATENT OFFICE.

WILLIE D. WHITNEY, OF CLARENDON, NEW YORK.

WIRE-FABRIC MACHINE.

SPECIFICATION forming part of Letters Patent No. 552,025, dated December 24, 1895.

Application filed September 12, 1895. Serial No. 562,342. (No model.)

To all whom it may concern:

Be it known that I, WILLIE D. WHITNEY, of Clarendon, in the county of Orleans and State of New York, have invented certain new and useful Improvements in Wire-Fabric Machines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the reference letters and numerals marked thereon.

My present invention relates to machines for making that class of wire fabric used particularly for fencing, consisting of wires twisted about each other, and, if desired, about longitudinal wires, forming a netting; and it has for its object to provide a greatly-simplified machine in which the transfer of the spool-carriers, sometimes called "twisters," from one plane to another is accomplished automatically; and to these and other ends the invention consists in certain improvements hereinafter fully described, the novel features being pointed out in the claims at the end of this specification.

In the drawings, Figure 1 is a side view of a machine constructed in accordance with my invention for making fencing in the field; Fig. 2, a front view of the same, partly in section, showing a second position of the parts in dotted lines; Fig. 3, a cross-sectional view on the line 4 4 of Fig. 2 with the parts in the position shown in dotted lines; Fig. 4, a perspective view of the spool-carrier; Fig. 5, a bottom plan view of one of the spool-carriers; Fig. 6, a plan view of the device for moving the machine; Fig. 7, a side elevation of the machine arranged for making square-mesh fencing.

Similar reference letters and numerals in the several figures indicate similar parts.

In the present embodiment of my invention I have shown it applied to a traveling frame adapted for making, in the field, fencing having longitudinal strands or wires, said frame embodying an upright post B having suitable braces B', and at its lower end supporting-wheels B², resting upon a board or support C having a rib C' grooved on opposite sides, into which grooves project the inwardly-extending ends B⁴ of the braces B'.

Passing through the post B, and at even distances apart, are tubes D, preferably extending at the front, as shown, and through these pass the longitudinal wires *a b c*, &c., of the fence or fabric, and upon them are loosely journaled rotary supports for the spool-carriers, said supports consisting, in the present instance, of intermeshing gears E having, at the front, plates E', between which and the gears are recesses for the accommodation of the bottom plates F of the spool-carriers.

E² indicate studs or bosses arranged in the recesses and projecting from the face of the gear, and E³ are latch-pins passing into the recesses through apertures in the plates E' and pressed inward by springs E⁴, small heads on the latch-pins limiting their inward movement. The studs and latch-pins are arranged some distance apart, as shown, the former being arranged to co-operate with the curved grooves F³ in the rear side of the plate F of the spool-carrier, and the latch-pins to co-operate with the incline F³ on the top of said plate, and the curved slot F' in one side thereof, the groove and slot crossing, as shown, and the relations of the parts being such that the spool-carrier is held by the latch and stud on the rotary support and may be rotated with it without danger of dropping out.

Upon the outer sides of the plates F are the spools G containing the weft or filling wire *g* and mounted on a spindle in a suitable yoke-frame F⁴ having the perforated cross-bar F⁵ through which the weft-wire passes, any suitable brake or tension device being applied to the spool to prevent movement excepting when the wire is positively drawn off. The outer plates E' of the rotary supports are preferably recessed at *h* for the accommodation of the standard of the spool-carrier, as shown in Fig. 2.

The gears E intermesh and are adapted to be rotated in either direction by means of bevel-pinion H mounted on a frame H' and having an attached handle or crank H², said pinion meshing with a corresponding bevel-wheel E^x formed upon or attached to one of the gears E, as shown in Fig. 3.

The devices for moving the frame B after the wires are twisted consist of a clamp embodying jaws or levers J J, pivoted to a block

or support J' and adapted to grip one of the longitudinal wires of the fence or fabric, the outer ends of said jaws being connected by links J² with the end of a lever J³ pivoted to the main frame at j. It will be seen that when the lever is moved in the direction indicated by the arrow in Fig. 1 the jaws J J will grip the wire and the machine will be moved, and upon moving the lever in the opposite direction the jaws will slip on the wire, the distance of movement of the frame depending on the movement of the lever, which is adjusted to the size of the mesh required.

When making wire fabric or fence such as shown in Fig. 1, the longitudinal wires are first set up and held taut, being passed through the tubular supports D. Then the filling-wires g from the spools are secured to the end post or the longitudinal wires by twisting or in any suitable manner. For the purposes of illustration I will number the supports E from the top, calling the upper one 1, the next 2, and so on, and the upper longitudinal wire a, the next b, and so on. Starting from the position shown in Fig. 2, in which the slots and grooves in the spool-carriers are engaged by the pins and studs on the supports E, the machine may be operated to twist the filling-wires together and around the wires a c e or b d f, as desired; but, assuming that the first twist is to be around the wires b d f, the supports E are rotated by the handle in the direction of the arrows, Fig. 2, and those numbered 2 4 6 will carry the spool-carriers F around, as in dotted lines, their latches E³ co-operating with the sides of the slots F' and the studs E² preventing the carriers dropping out. This operation is accomplished because the slots F' in the spool-carrier plates F extend transversely of the path described by the latch-pins on the supports 2, 4 and 6 that are to move the spool-carriers, and substantially coincident with the path described by the latch-pins on the supports 1, 3 and 5 that are to rotate empty, the grooves F² being correspondingly arranged relative to the studs E² on the supports. This rotary movement is continued in the same direction as long as may be necessary to form the required number of twists around the wires b, d and f, (the weft or filling wires passing around the longitudinal wires b and d being of course twisted around each other also, while a single weft-wire is passing around wire f.) During the movement in this direction, as the carriers approach the position shown in full lines in Fig. 2, the latches E³ on the supports indicated by 1, 3 and 5 ride up the inclines F³ on the plate F of the spool-carriers and drop into the slots F', and as long as the motion is in the direction indicated the carriers will be rotated as described and maintained in the supports indicated by 2, 4 and 6; but when it is desired to twist the weft-wires around the longitudinal wires a c e it is only necessary to reverse the direction of movement of the supports E after

said supports have completed a full revolution, after the latches have dropped into the slots F', and when the parts are in the position shown in Fig. 2 in full lines, and the operation of twisting the weft-wires around wires a c e may be understood by assuming that the supports E are rotated in the opposite direction from that indicated by the arrows. Now, as before, the latch-pins E³ of the supports 1, 3 and 5, that are to move the spool-carriers, describe a path transversely of the plane of the slots F' in the carriers, and consequently move the carriers with them, while the latches E³ on the supports 2, 4 and 6 ride up the inclines on the moving carriers, drop into the slots F' and pass out as the carriers turn away from the supports. It will now be understood that the weaving of the fence can be readily accomplished by making the required number of twists around the longitudinal wires and then reversing the operating means, transferring the spool-carriers and twisting on the other wires in the opposite direction, thus dispensing with the transferring mechanisms heretofore deemed necessary and simplifying and lightening the machine.

While the present embodiment of my invention is designed for building fences in the field, I do not wish to be confined to this arrangement, as wire netting or fabric could be readily made in quantity on large machines built for the purpose, the necessary relative movement of the fabric and machine being accomplished by moving the fence fabric instead of the machine, as herein.

Although the spool-carriers are supported only at the lower end and at some distance from the spools themselves, it will be noted that the wires g draw from the aperture in the cross-piece F⁵ to the longitudinal strand, in the direction of the length of said cross-piece, and that while the carriers are being transferred and are rotating the end of the cross-piece is against and turns about the tubular extensions D, as seen in Figs. 1 and 2, thereby preventing the carriers from dropping out.

If it is desired to make a fence with square or rectangular meshes, as shown in Fig. 7, it may be accomplished by this machine by removing all of the spool-carriers excepting one, and causing the supports E to make one (or more) and a half complete turns around each longitudinal wire before the motion is reversed, causing the carrier to travel down. Then move the frame back, twisting the wire around the lower wire f, as shown, and when the carrier has made one or more complete turns, reverse the motion and it will be transferred to the next support E above, if the motion is reversed when the carrier is in engagement with the support to which it is to be transferred.

The sockets or recesses in the rotary carrier-supports E and the plate F, which in the present construction is the base of the spool-carrier, is but one form of co-operating parts

whereby the carriers are seated upon the rotary supports, and by the terms "co-operating projections" and "recesses," used in the claims, I wish to be understood as referring broadly to a means for seating the carriers on the supports in such manner that they may be retained by the latches when the rotation is in one direction, whether the recesses be in the support E and the ends of the plate F be the projections, as shown, or vice versa.

As far as the operation of my device is concerned, it is immaterial whether the latches are placed on the supports or gears E or upon the carrier-plates F so long as the relative movements of the latches, inclines and grooves are preserved. The slots F² and inclines F³ on opposite sides of the spool-carrier plate in connection with spring-latches on the supports E constitute what I term a "reversed" latch connection between the parts—that is, one in which the transfer of the carrier from one support to the other is caused by the direction of the movement of the support relative to the carrier.

I claim as my invention—

1. In a machine for making wire fabric, the combination of a series of rotary supports, a series of spool-carriers having spools thereon, cooperating projections and recesses between the carriers and supports, and latch devices for holding the carriers on the supports when the latter are moved in one direction, relatively, substantially as described.

2. In a machine for making wire fabric, the combination of a series of rotary supports, a series of spool-carriers and spools thereon, cooperating projections and recesses between the carriers and supports, and reversely operating latch devices between the opposite sides of the spool-carriers and the adjacent supports, substantially as described.

3. In a machine for making wire fabric, the combination of a series of rotary supports, a series of spool-carriers and spools thereon, cooperating projections and recesses between the carriers and supports, and automatic carrier transferring and holding devices, substantially as described, between the supports and opposite sides of the spool-carriers, said transferring devices embodying latches and cooperating engaging parts, which are reversed on opposite sides of the carrier, whereby the carriers will be transferred from one support to the next when the latter are rotated in one direction, and the latches will yield and permit their passage without transferring when moving in the opposite direction, substantially as described.

4. In a wire fabric machine, the combination with a series of rotary supports, each having two latches, of a series of spool carriers having reversed recesses and inclines on opposite sides for the engagement of the latches on the supports, substantially as described.

5. In a wire fabric machine, the combination with a series of rotary supports, the ad-

jacent ones moving in opposite directions, of a series of spool-carriers and reversed latch connections between opposite sides of the carriers and the adjacent supports, whereby the carriers will be transferred from one support to another when rotated in one direction and back again when rotated in a reverse direction, substantially as described.

6. In a wire fabric machine, the combination with two or more rotary supports connected for operation in opposite directions, of a spool-carrier and reversed latch connections between opposite sides of said carrier and the supports, substantially as described and for the purpose specified.

7. In a wire fabric machine, the combination with a series of rotary supports, having intermeshing gears, and apertures for the passage of warp wires, of a series of spool-carriers and reversed latch connections between opposite sides of the carriers and adjacent supports, substantially as described.

8. In a wire fabric machine, the combination with a series of rotary supports having apertures for the passage of warp wires and intermeshing gears, of a series of spool carriers, cooperating projections and recesses on the carriers and supports and reversed latch connections, substantially as described, between opposite sides of the carriers and adjacent supports, whereby the alternate supports will move the carriers around the warp wires when operated in one direction and when operated in the other direction the carriers will be transferred to the supports intermediate those first operating them, substantially as described.

9. In a wire fabric machine, the combination with the main frame, having a series of tubes, and a series of gears on the tubes, having the latches and recesses or sockets, of a series of spool-carriers, having the reversed inclines and slots cooperating with the latches, and the spool frame adapted to bear against the tubular extensions on the main frame, substantially as described.

10. The combination with the intermeshing gears, each having the outer plate, studs and latches thereon, of the spool-carriers having the reversed slots and inclines on opposite sides, and the grooves cooperating with the studs on the gears, substantially as described.

11. In a wire fabric machine, the combination with the main frame, the extensions thereon and the rotary supports, of the spool-carriers, and automatic transferring devices, substantially as described, between the opposite sides of the supports and of the carriers, bearing surfaces on the carriers engaging the extensions on the frame and cooperating holding recesses and projections between the supports and carriers, substantially as described.

12. In a fence machine, the combination with the main frame, having wire-twisting devices thereon, of an operating device for moving the frame consisting of a lever pivoted

thereon, and the cooperating wire-clamping jaws connected to said lever and adapted to grip one of the longitudinal wires of the fence, when the lever is moved in one direction, substantially as described.

13. The combination with a fence machine embodying a main frame and wire-twisting devices thereon, of a lever pivoted on the

frame, a wire-clamp sliding on a fence wire, and having jaws adapted to engage said wire, and connections between said jaws and the lever, substantially as described.

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