J. W. DWIGGINS.

MACHINE FOR MAKING WIRE FABRIC.

APPLICATION FILED SEPT. 17, 1917.

1,270,129.

Patented June 18, 1918.

4 SHEETS—SHEET 1.

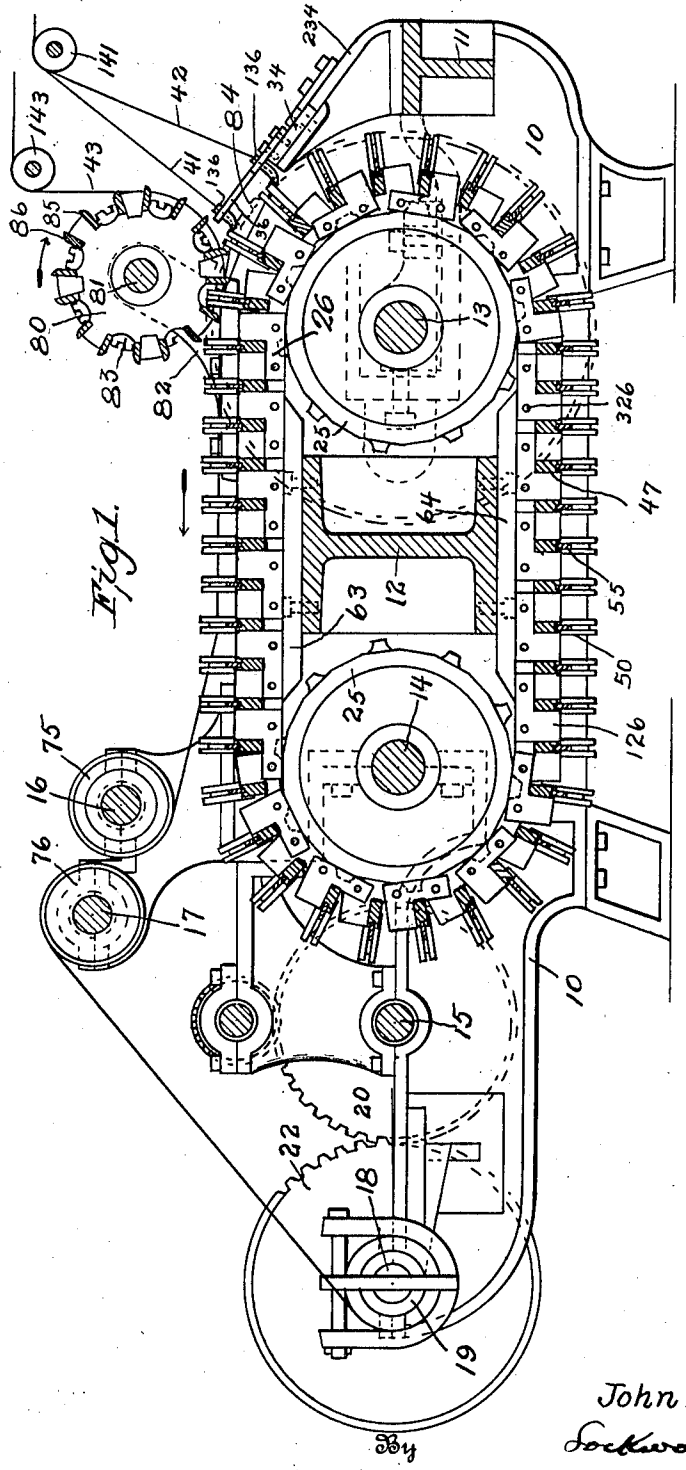


Fig. 1.

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Fig. 5.

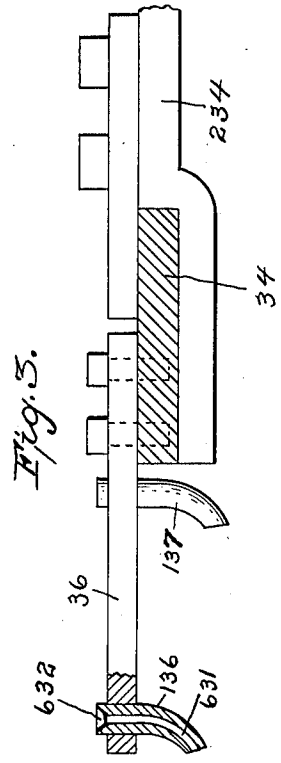
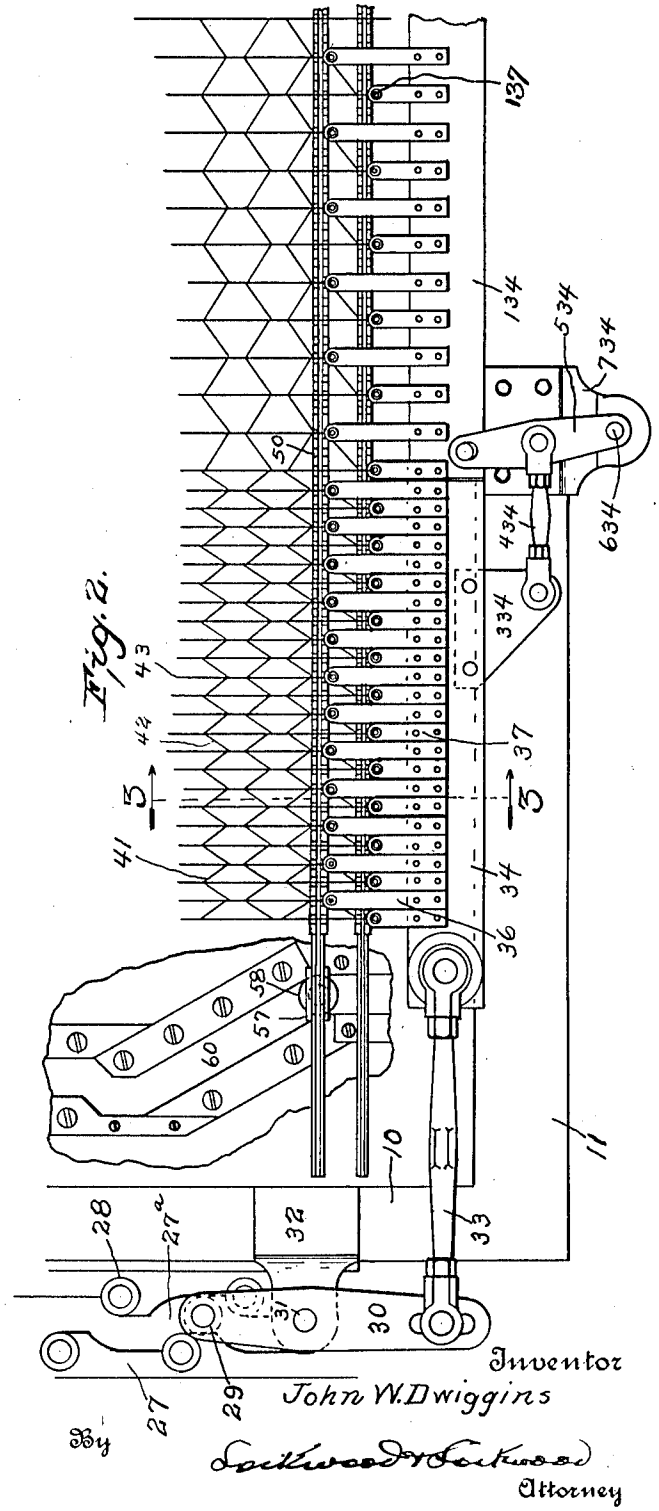


Fig. 2.



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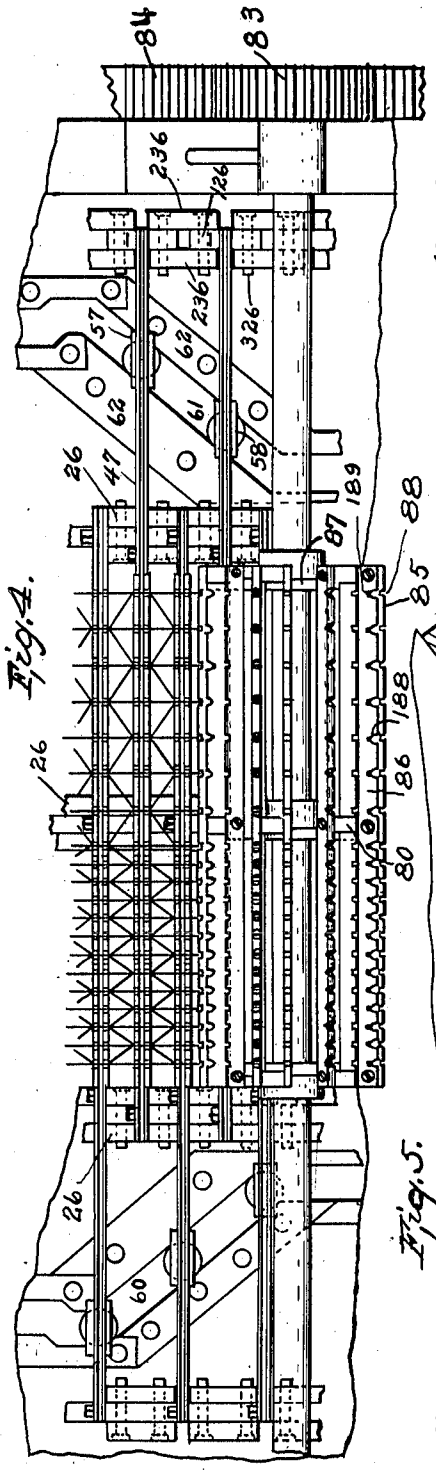


Fig. 4.

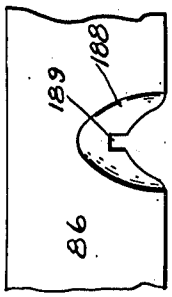


Fig. 6.

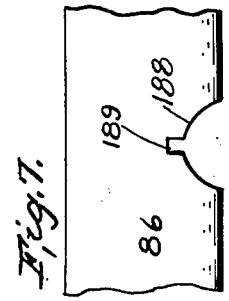


Fig. 7.

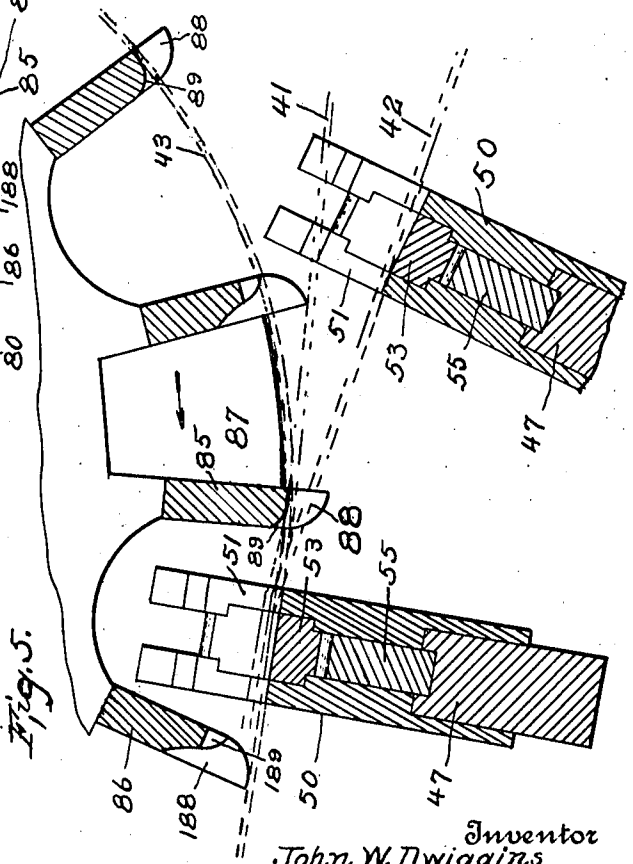


Fig. 5.

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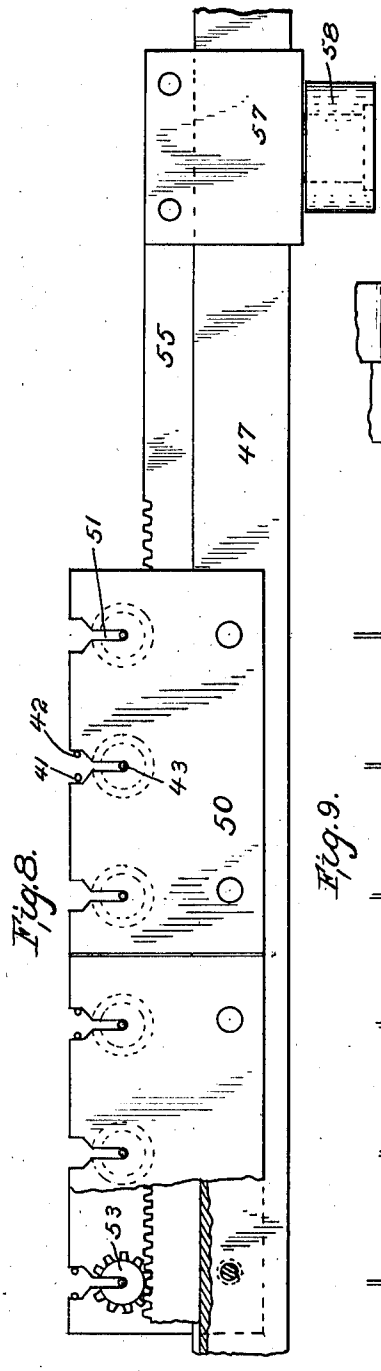


Fig. 8.

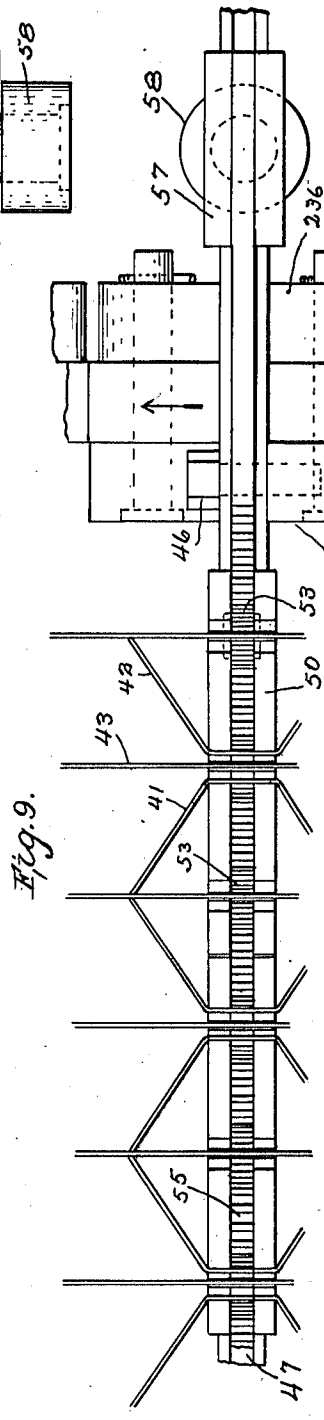


Fig. 9.

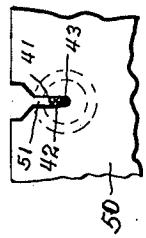


Fig. 11.

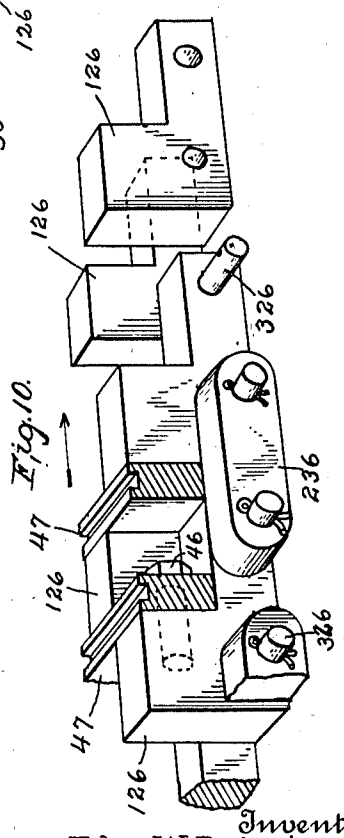


Fig. 10.

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UNITED STATES PATENT OFFICE.

JOHN W. DWIGGINS, OF MARION, INDIANA, ASSIGNOR TO PARRISH-ALFORD FENCE & MACHINE COMPANY, OF KNIGHTSTOWN, INDIANA, A CORPORATION.

MACHINE FOR MAKING WIRE FABRIC.

1,270,129. Specification of Letters Patent. Patented June 18, 1918.

Application filed September 17, 1917. Serial No. 191,818.

To all whom it may concern:

Be it known that I, JOHN W. DWIGGINS, a citizen of the United States, and a resident of Marion, county of Grant, and State of Indiana, have invented a certain new and useful Machine for Making Wire Fabric; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which like marks refer to like parts.

The object of this invention is to improve the construction and operation of machines for making wire fabric substantially of the character set forth in my former Letters Patent, No. 1,192,766, patented July 25, 1916.

One feature of this present invention is in the means and manner of feeding the mesh wires to the twister mechanisms. In my former machine, two series of pivoted fingers were employed for this purpose, with their alternate finger projecting farther rearward than the fingers on each side of it and the mesh wires extended through eyes in the rearward ends of these fingers and each finger was pivoted at its front end to a fixed plate and at a point intermediate its ends to a transversely oscillatory shifting bar. In this present invention the fingers are rigidly secured to the shifting bar and, therefore, have an absolutely positive movement to the front transversely of the machine as the shifting bar reciprocates and the shift of the fingers and the shifting bar is exactly the distance between one twister wheel and the next twister wheel in the twisting mechanism so that there is always absolutely true alinement of the finger and the series of twister wheels with which it is to coöperate, whereby the wires are always brought into the same position and there is no chance for looseness in operation or by-play, as in the former structure, and this structure is greatly simplified and much more durable because the fingers are rigidly secured to the shifting bar.

Another feature of this invention in the wire feeding mechanism referred to is the ability to make different portions of the fabric of different mesh by slight adjustment of the machine, particularly of the shifting bar structure. The mesh of the fabric depends exactly upon the shift of the shifting bar. The greater that shift is the larger will be the mesh of the fabric. By making the shifting bar in two or more independent sections and connecting two adjacent sections by a multiplying leverage, one section of the shifting bar may be caused to shift farther or less than its preceding and actuating section. Therefore, the fingers on the shifting bar that have a greater throw will form the corresponding portion of the fabric with a correspondingly greater mesh.

Another feature of the feeding mechanism is means in this present invention for forcing the wires into the twister and down to the bottom of the slot therein, and also in preventing the mesh wires from escaping from the mouth of the slots in the twisting mechanisms after they have been introduced therein by the feeding fingers. In my former machine, the mouths of the slots in the twisting mechanisms flared with continuously sloping edges. After the machine wires have been brought into the mouth of such slots by the feeding fingers, they were liable to spring out of the slots because of the strain they were under, since they extend obliquely when operating the mechanism and are subjected to considerable strain. Therefore, in the present mechanism the side edges of the mouths of these slots are made vertical instead of oblique so that the mesh wires will not be drawn laterally out of the mouths of the slot under the strain to which they are put. In the second place, a drum feeder is provided with notched plates on it, one notched plate having notches in it adapted to force the line wire down into the bottom of the slot in the twister mechanism and the succeeding plate having notches adapted to engage the two associated mesh wires and bring them together and force them down to the bottom of the slot in the twister wheel. The latter slots are wider than the former slots and have beveled side surfaces so as not to cut or abrade the mesh wires which extend obliquely and under considerable strain.

This mechanism makes the operation of the machine absolutely certain and no wires can escape from the proper twisters and all are forced to the bottom of the slot so that the mechanism will operate with accuracy and form a fabric of uniform character so far as the union between the line wires and the mesh wires is concerned.

Another feature of the invention consists in the chain mechanism for mounting the series of twisting mechanisms into a continuous endless series or chain structure. In my former Letters Patent a chain of more or less usual character was provided, with certain links of which the guide bars of the twisting mechanisms were secured. The chain is not made so as to be self-supporting or to maintain itself in a horizontal position when passing along the upper side of the machine. It would sag in so far as the guiding mechanism would permit it. In the present invention two adjacent series of block links are provided in the intermediate chains arranged so that while each guide bar is secured to the upwardly extending portion of one block link, the upwardly extending portion of the adjacent block link in the other series abuts and bears tightly against the opposite side of the guidebar, while traveling horizontally along the upper side of the machine and during the weaving process. In other words, during the weaving process, each guide bar is pinched between adjacent block links of the chain so as to greatly strengthen the structure and give positiveness to the movement of the chain structure and twisting mechanism and prevent any play or dislocating movement. It prevents any lateral play or displacement of the twisting apparatus and keeps all of the slots thereof in true alinement longitudinally of the machine and, therefore, does not kink or bend the line wires, but makes a smooth, straight and relatively perfect fabric.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims.

In the drawings, Figure 1 is a vertical longitudinal section substantially central with the machine. Fig. 2 is a plan view of part of the front of the machine, parts being omitted, the figure showing more particularly the series of feeding fingers and the means for operating them. Fig. 3 is a section on the line 3—3 of Fig. 2, with parts shown in elevation and other parts in section and parts being broken away. Fig. 4 is a plan view of the front part of the machine omitting the feeding mechanism, parts being broken away. Fig. 5 is a central vertical section on an enlarged scale, through a portion of the wire feed plates and adjacent twister mechanisms, showing their relative positions during operation, whereby they coöperate for bringing both the line wires and mesh wires properly into the twisters. Fig. 6 is an elevation of one face of the feed plate which gathers the mesh wires and forces them into the twisters, the ends of the plate being broken away. Fig. 7 is a similar view of the opposite face of the feed plate, the ends of the plate being broken away. Fig. 8 is a front elevation of a portion of the twisting mechanism, parts being in section and parts broken away. Fig. 9 is a plan view of the device shown in Fig. 8, and also a portion of the chain mechanism for carrying the twister mechanism. Fig. 10 is a perspective view of a portion of one of the inside chain mechanisms, some links connected together and, others disconnected, and two guide bars for the twister mechanisms, parts being in section. Fig. 11 is a portion of what is shown in Fig. 8, showing all of the set of wires down in a twister.

General features of the construction.—There are side frames 10, one on each side of the machine, each frame having supporting legs, as shown in Fig. 1. These side frames are connected at their front by the cross frame 11 and in the middle by a cross frame 12, and they are also held in place by the shafts 13, 14 and 15, and the reel shaft 18 of a reel 19. Power is transmitted to the various parts of the machine through the shaft 15 and goes therefrom through a gear 20 to a gear, not shown, on the shaft 14. The gear 20 also drives a gear 22 for operating the reel shaft 18. On each of the shafts 13 and 14 there are five sprocket wheels 25, one on each end of each shaft, one at the middle of each shaft and one between each end sprocket and the central sprocket and the sprocket wheels of the two shafts correspond with each other longitudinally of the machine. On each of the five pairs of sprocket wheels there is a sprocket chain 26 mounted so that the sprocket chains in the machine transmit power from the shaft 14 to the shaft 13.

On the end of the shaft 13 there is a cam wheel 27, see Fig. 2, having in its periphery a channel 27ª and a series of rollers 28 forming together a path which is in the nature of the cam groove 28 referred to in my former Letters Patent. These rollers and channel engage and actuate a roller 29 projecting from one end of a rocking lever 30 fulcrumed between its ends at 31 to a plate 32 secured to a side frame 10. This lever is pivotally connected with a rod 33 which runs to a finger shifting bar 34 which reciprocates transversely of the machine at the front end thereof. Fingers 36 and 37 are secured to this shifting bar, the former being longer than the latter, as shown in Fig. 2, and the function of this construction is to shift the mesh wires 41 and 42 from one twister to another, as will hereinafter be ex-

plained. The construction and operation of this part of the mechanism is different from that shown in my former patent. The shifting plate 34 may be made up of sections, as shown in Fig. 2, where there is an additional section 134 abutting with the end of the bar 34 and being in alinement therewith and practically a continuation thereof. The shifting bar, or bars, whether there be one or many, are slidably mounted in arms 234 secured to the frame 11, as seen in Fig. 1. The purpose of adding a second section 134 to the shifting bar is to enable the machine to weave a fabric of variable mesh. The mesh of the fabric is determined by and dependent upon the shift or the throw of the shifting bar. As seen in Fig. 2, the throw of the shifting bar 34 is slight and makes a relatively fine mesh fabric, but the bar 134 has double the throw of the bar 34 and it makes its portion of the fabric of coarser mesh.

The bar 134 is caused to have a relatively greater movement than the bar 34 by intervening mechanism actuated by said bar 34. Thus, as seen in Fig. 2, there is a bracket 334 connected with the bar 34 to which a connecting rod 434 is pivoted. This bar is centrally pivoted to a lever 534, that is fulcrumed at 634 to a bracket 734 connected with the frame. The lever 534 is pivoted to the bar 134. The leverage is such that said lever will cause the bar 134 to have double the movement of bar 34. However, by properly adapting said multiple mechanism, the relative movement of bar 134 may be made more or less than double that of the bar 34, if desired. And the invention is not limited to the number of sections the shifting bar mechanism is composed of. While two are shown here there may be more sections having still different extent of oscillatory movement and actuated successively by the preceding bars or sections, as shown in Fig. 2. Or lever 534 may be disconnected from the bar 134 and the latter secured to the bar 34, so as to make the fence all of one mesh. Therefore, while there is shown in Fig. 2, a fabric with only two variations in mesh, the invention is such that the fabric may be formed of one mesh or of more than two variations in mesh, if desired, without departing from the above feature of the invention.

In this invention the fingers 36 and 37 are rigidly secured to the shifting bar so that there can be no lost movement of any kind in the fingers, but they will be positively actuated and moved for the exact distance required. As best shown in Fig. 3, each finger is provided with a feeding means for the mesh wires, comprising a hollow body 136 which extends through the finger at right angles thereto, the lower end of the body being curved forwardly so that the discharge end of the feeding device will rest in line with the travel of said wires while passing through the machine.

The bore 631 extends longitudinally of the body and is curved coincident to the curvature of the body so that the wire will readily pass through the feeding devices without binding or having undue frictional contact therewith and the upper end of the bore 631 being above the finger and flared as shown at 632, the wire can be readily and quickly threaded through the feeding device. The mesh wires come over pulleys 141 from reels, not shown. The mesh wires 41 pass through the feeding devices 136 in the fingers 36, while the other mesh wires 42 pass through the feeding devices in the fingers 37. The feeding devices 137 in the adjacent fingers 36 and 37 are spaced apart for a distance substantially equal to the distance between two sets of twister mechanisms as they pass said feeding devices, and as appears in Fig. 1, for the purpose which will hereafter be explained. The fingers are mounted at inclinations, as shown in Fig. 1, or so that the feeding devices will be substantially equidistant from the shaft 13 and, therefore, from the twister mechanism as they pass.

There is further means which will hereafter be explained for assisting in the proper feed of the wires into the twisters.

Twisting mechanism.—The sprocket chains herein differ from those shown in my prior Letters Patent in important particulars. There are five chains shown, one chain at each side and three inside or intermediate chains. The outside and inside chains differ somewhat in construction. The construction of each inside chain is shown in Fig. 10. There are two series of block links 126, an inner and an outer series, alternating with each other transversely and connected with each other by plain links 226 and pins 326. Each block link 126 is L-shaped with the long portion horizontal normally, and the shorter portion projecting upwardly when the chain is on the upper side of the machine. The pins 326 project through the overlapping portions of said block links 126 and also through the plain links 236. There is a plain link connecting each successive pair of the adjacent series of block links 126 in order to strengthen the chain and balance its pull. When the chain is traveling horizontally, the projecting portions of lateral adjacent block links 126 are spaced apart for holding the twisting apparatus, as will hereafter be explained. There are shown herein three sprocket chain structures, one at each side and one in the middle of the machine.

The outside chains are each formed of three series of links, the two outside series being alike, that is, simple form of links

236, and the inside series is formed of the links 126, these various links being transversely pivoted together by pins 326. Only alternate guide bars 47 are secured to the block links in one of the outside chains and the other alternate guide bars are secured to the block links in the other outside chain. Therefore, as seen in Fig. 4, one guide bar 47 is secured to one outside chain and to all three of the inside chains, while the next guide bar 47 is secured to the other outside chain and to all three of the inside chains. This latter characteristic of the construction is substantially the same as it is in my former Letters Patent.

There is a succession of twisting mechanisms mounted in connection with the chains so as to make an endless chain series of them. One of these twisting mechanisms is partially shown in Figs. 8 and 9. Each twister mechanism has a guide bar 47 extending transversely of the machine and on which the remainder of the twisting mechanism is mounted. One guide bar 47 is secured by bolts 46 to the rear face of the upwardly projecting portions of transversely corresponding block links 120. The next guide bar 47 is secured to the rear faces of the upwardly projecting portions of the next lateral adjacent block links 126, as is shown clearly in Fig. 10. In Fig. 10 the guide bars 47 are shown secured to the right-hand block links and are not shown secured to the other block links, but the spaces for the guide bars are shown between the other block links. Therefore, there is a guide bar 47 secured to each block link in each series and the arrangement is such that when the chain travels horizontally, as shown in Fig. 10, each guide bar 47 will lie between and be pinched and held in place by and abut against two link blocks, the one in front of the bar to which the bar is secured and the one immediately to the rear of the bar but to which the bar is not secured. When the chain goes over the sprocket wheel, this last mentioned block will be spread away from the guide bar 47, but when traveling horizontally, it will abut tightly against it so that this structure in itself will cause the horizontal portion of the chain to be self-supporting, that is, so as to maintain it in true horizontal position without sagging. This greatly increases the strength of the chain and twisting structure of the machine.

The twister holding plates 50 are secured on the opposite sides of each guide bar 47, as seen in Figs. 8 and 9. These plates are built in sections and extend only partially across the machine and are located in the central portion thereof and extend substantially the width of the fence or fabric to be made. They have registering vertical slots 51 formed differently in this machine as compared with my former machine, as the widened upper portions of each slot 51 have vertical side walls, as seen in Figs. 8 and 11. This change is for an important purpose as the vertical side walls of the slots hold the mesh wires 41 and 42 from escape from the plates 50 as they are being inserted in the slots and the twisting mechanism is moving upward over the front of the machine, as hereafter will be explained, and as the fingers 36 and 37 move laterally. It is found that in the slot, as heretofore formed, this lateral movement of the fingers caused a lateral pull or movement of the mesh wires which would tend to draw them upwardly out of the slot 51. With a vertical wall this would not occur.

The twister wheels 53 are mounted in and between plates 50 and have radial slots registering with the restricted portions of the slots 51 in the plates 50. These twister wheels mesh with and are rotated by the rack bars 55 which extend transversely of the machine and between the plates 50 and slide in a longitudinal groove in the upper edge of each guide bar 47. They are actuated by U-shaped plates 57 supported on guide bars 47 so that the latter are slidable therein, but they are secured to rack bars 55. A roller 58 is mounted on the lower end of each plate 57 and projects into a guideway 60 or 61. One of these guideways is near each side of the machine, as seen in Fig. 4, and is formed by a pair of oppositely located bars 62 which are secured on top of a plate 63 and on the bottom of a plate 64 and the curved end plates, not here shown, but substantially as shown in my former Letters Patent. The plates 63 and 64 are secured to the frame member 12, as seen in Fig. 1. The chains and twisting mechanisms travel over the plate 63 between the front and the rear sets of sprocket wheels 25.

The inclined portions of the guideways 60 and 61 reciprocate two adjacent rack bars simultaneously and in opposite directions. The left hand guideway 60 actuates the left hand set of rack bars and the right hand guideway 61 operates the right hand set of rack bars. Therefore, the inclined portions of the two guideways 60 and 61 are inclined in opposite directions, as shown in Fig. 4. The guideways are the same in this machine as shown in my former Letters Patent and further explanation is needless. It is obvious that the lateral movement of the rack bars 47 by the guideways will operate the twisters 53. All of the twisters in one twisting mechanism will be operated in one direction and all of the twisters in the next twisting mechanism will be operated in the opposite direction.

Feed of wires to twisters and transfer of mesh wires.—The endless chain or series of twisting mechanisms travel in a direction in-

dicated by the arrow in Fig. 1, and therefore, travel upwardly at the right hand or front end of the machine, and as a twisting mechanism arises, the slots 51 thereof receive the wires 41, 42 and 43, of which the fabric is being made, and guide such wires down into the slot in the twister wheel, as shown in Fig. 11. As seen in Fig. 1, the mesh wires 41 and 42 enter the enlarged portions of the slots in the plates 50 before the line wire 43, but as the machine operates, these mesh wires must be moved laterally to and fro from one strand wire to the next to form the fabric herein shown. The mesh wires are moved laterally to be brought into position to enter the proper twisters, by the fingers 36 and 37, as heretofore explained. The bar 34 and its associated bar or bars 134, if there be more than one section in the shifting bar mechanism, is given a movement to and fro equal to the distance between one twister and another and between one line wire and another, according to the size of mesh desired, and at the limit of such movement of said fingers in either direction, the wires are brought into alinement with the proper longitudinal row of twisters and the line wire passing through said row of twisters.

As soon as the twisters rise to and receive the mesh wires, then the fingers are oscillated to their other positions so that each finger will carry its mesh wire to the next mesh wire. While this shifting movement of the fingers takes place, the reel winds or moves the fabric one step. Then the twisters are operated for twisting the mesh wires around the line wires. In the next operation, the arms are moved back from the second line wire to the first line wire mentioned in the process.

A novel feature of this invention is the means shown particularly in Figs. 5 to 7, for guiding and forcing the wires, both the line wires and the mesh wires, fully down into the slots in the twisting mechanism. For that purpose a wire feed drum 80 is secured on a shaft 81 mounted in arms 82 extending up from the side frames 10 and driven by gears 83 and 84 on the shafts 81 and 13, respectively. But said driving gears are not absolutely necessary as the feed drum 80 will be driven by the successive twisting mechanisms in the chain construction heretofore described and shown in Fig. 1. For each twisting mechanism enters and projects between the pairs of guide plates 85 and 86 thereon, as seen in Figs. 1 and 5. These guide plates extend longitudinally of the drum and are secured by screws or otherwise to radial keystone shaped projections 87. The plate 85 is secured to the front side of each projection and the plate 86 to the rear side. These projections extend disk-like from each end of the drum and do not extend entirely across the machine. They are seen mounted in the lower part of Fig. 4.

The outer edge of plate 85 has in it a series of notches 88 the forward end wall of which is rounded as shown at 89 to present a non-cutting edge to the wire. There is one of these notches corresponding and registering with each row of twister wheels to receive the line wire 43, as shown in Fig. 1, and thus prevent lateral displacement of said wire so that it will be caused always to enter a slot 51 in the twister mechanism. By this means the line wire 43 is forced down into the slot in the twister wheel to its limit of movement, as shown in Fig. 5.

The plate 86 follows the companion plate 85 and has in it a series of notches 188 corresponding in position with the notches 88 but it is cut deeper and beveled more both radially and laterally for the purpose of being sure to receive the mesh wire which extends diagonally, as shown, from one line wire position to another. The side walls of the slot 188 are laterally beveled in order not to present sharp corners to the inclined mesh wire while it is entering the slot. Otherwise since the mesh wire is under considerable tension any sharp projecting corner of the slot would tend to cut the mesh wire. This wide mouthed slot 188 receives both mesh wires which are in oppositely inclined positions and usually engaged with the vertical walls of the widened upper portions of the slots 51 and as the drum turns, forces said wires together and down into the narrow portion of the slot 51 and the slot of the twister, as shown in Fig. 11.

Forming and removing the fabric.—When the wires have been inserted in the proper twisters at the front end of the machine, they remain therein until the fabric is woven. This twisting movement occurs while the twisters are passing the outwardly inclined portions of the guideways 60 and 61. These inclinations in the guideways move the rack bars far enough to cause slightly more than one revolution of the twisters, which effectively unites the mesh wires with the line wires. Said outwardly inclined portions of the line wires are followed by the straight longitudinal sections of said guideways during the travel of the rollers 58 of any twisting mechanism, through which the wires are still held in the twisted position by the twisters.

After the fabric is twisted, it is removed from the twisting mechanism, while the twisters are still traveling in a horizontal rearward direction, as shown in Fig. 1, and before they have begun to turn outward at the rear end of the machine. This is accomplished by two rollers 75 and 76 on the shafts 16 and 17, respectively. These rollers

are at a higher elevation than the fabric forming mechanism and the fabric passes from said mechanism under the roller 75 and over the roller 76 to the reel. The reel, therefore, draws the fabric through the rollers. The roller 75 holds the fabric down somewhat so that the elevation of the fabric from the twisting mechanism will be gradual. The roller 75 also is located in position to permit the fabric to be elevated entirely away from the twisting mechanisms before they begin to revolve downward at the rear of the machine.

The invention claimed is:

1. A machine for making wire fabric, including an endless series of successive twister mechanisms having in each a set of slotted twisters, sprocket wheels on which said series of twisting mechanisms is mounted so as to elevate the twisting mechanisms at the front of the machine and convey them rearwardly horizontally, a transversely reciprocatory shifting bar in front of the machine, and fingers secured to said bar for guiding the wires to the twisters as they rise at the front of the machine, said fingers being alternately long and short and arranged so that the long fingers will guide the wires to the alternating twisters in one twisting mechanism and the short fingers will guide the wires to the alternating twisters in the following twisting mechanism at the same time.

2. A machine for making wire fabric, including an endless series of successive twister mechanisms having in each a series of slotted twisters, sprocket wheels on which said series of twisting mechanisms is mounted so as to elevate the twisting mechanisms at the front of the machine and convey them rearwardly horizontally, a transversely reciprocatory shifting bar in front of the machine, and fingers secured to said bar for guiding the wires to the twisters as they rise at the front of the machine, said fingers being mounted in an inclined position so as to be substantially equidistant from two sets of twisting apparatus at the same time and being alternately long and short and arranged so that the long fingers will guide the wires to the alternating twisters in one twisting mechanism and the short fingers will guide the wires to the alternating twisters in the following twisting mechanism at the same time.

3. A machine for making wire fabric, including an endless series of successive twister mechanisms having in each a set of slotted twisters, sprocket wheels on which said series of twisting mechanisms is mounted so as to elevate the twisting mechanisms at the front of the machine and convey them rearwardly horizontally, a transversely reciprocatory shifting bar in front of the machine, fingers secured to said bar, and an inwardly extended feeding device secured to each finger for guiding the wires to the twisters as they rise at the front of the machine, said fingers being alternately long and short and arranged so that the feeding devices in the long fingers will guide the wires to the alternating twisters in one twisting mechanism and the feeding devices in the short fingers will guide the wires to the alternating twisters in the following twisting mechanism at the same time.

4. A machine for making wire fabric, including an endless series of slotted twisters arranged in rows transversely and longitudinally of the machine, means for conveying said twisters from the front toward the rear of the machine, fingers for guiding the wires to the twisters at the front of the machine, a succession of shifting bars extending transversely of the machine at the front thereof and to which said fingers are secured, means for reciprocating one of said sections for a uniform distance, and means connecting said reciprocating section with the next adjacent section of the shifting bar arranged to reciprocate the latter section for a distance differing from the distance of reciprocation of the first-mentioned section.

5. A machine for making wire fabric, including an endless series of slotted twisters arranged in rows transversely and longitudinally of the machine, means for conveying said twisters from the front toward the rear of the machine, fingers for guiding the wires to the twisters at the front of the machine, a succession of shifting bars extending transversely of the machine at the front thereof and to which said fingers are secured, means for reciprocating the first section for a uniform distance, and multiplying means connecting the first section with the next section for simultaneously reciprocating the second section a greater distance than the first section.

6. A machine for making wire fabric, including an endless series of slotted twisters arranged in rows transversely and longitudinally of the machine, means for conveying said twisters from the front toward the rear of the machine, fingers for guiding the wires to the twisters at the front of the machine, a succession of shifting bars extending transversely of the machine at the front thereof and to which said fingers are secured, means for reciprocating the first section for a uniform distance, a bracket connected with said first reciprocating bar, a lever pivoted at one end to a fixed part of the machine and at the other end pivoted to the adjacent section of the shifting bar, and a

connecting rod pivoted at one end to said bracket and at the other to said lever between its ends at such point as to give the second section of the shifting bar the desired variation in reciprocatory movement from that of the first section of the shifting bar.

7. A machine for making wire fabric, including an endless series of slotted twisters arranged in rows transversely and longitudinally of the machine, means for conveying said twisters from the front toward the rear of the machine, transverse reciprocatory fingers for guiding the wires to the twisters at the front of the machine, a rotary drum mounted transversely and above the front part of the machine, and plates carried by said drum with slots therein for registering with the slots in the twisters, the slots in said plates being wide mouthed and obliquely beveled for engaging the two obliquely disposed mesh wires for each twister and bringing them together and forcing them down into the bottom of the slot in the twister.

8. A machine for making wire fabric, including an endless series of transversely disposed twister mechanisms, each twister mechanism having frame plates and twister wheels between them, and each twister wheel having a radial slot and there being a flaring slot in said plates adapted to register at times with the slot in the twister wheel, the side edges of said flaring slots being vertical, means for conveying said twisters from the front toward the rear of the machine, transverse reciprocatory fingers for guiding the mesh wires into the mouths of the slots in the plates in the twister mechanisms, and a positively driven transversely disposed rotary drum having plates thereon movable tangentially of said twisting mechanisms, said plates being provided with flaring slots with beveled side surfaces for engaging the two mesh wires in the wide part of the slots in said twister plates and forcing the wires down to the bottom of the slot in the twister wheel.

9. A machine for making wire fabric, including an endless series of slotted twisters arranged in rows transversely and longitudinally of the machine, means for conveying said twisters from the front toward the rear of the machine, means for guiding mesh wires to said twisters, a rotary drum extending transversely of the machine at the front part thereof, pulleys on a higher level than said drum over which the line wires pass to the machine, and plates on said drum provided with slots registering with the twisters in said machine for receiving the line wires and forcing them into the slots in the twisters.

10. A machine for making wire fabric, including an endless series of slotted twisters arranged in rows transversely and longitudinally of the machine, means for conveying said twisters from the front toward the rear of the machine, means for guiding line wires to the machine, and a rotary drum mounted transversely of the machine at the front part thereof and having a succession of pairs of transversely extending plates, one plate of each pair having slots in it which register with the slots in the twisters for receiving the line wire and forcing it into the slots in the twisters and the succeeding plate of each pair having corresponding slots with lateral beveled edges adapted to engage the two mesh wires and the line wires for each twister and forcing the same down to the bottom of the slot in each twister.

11. A machine for making wire fabric and the like, including a series of transversely extending twisting mechanisms having each a bar for supporting the parts of the twister mechanism, a pair of circular chain supports, and endless chains operating on said chain supports to which said twister bars are secured and whereby they are conveyed, said chains having links with vertical faces with one twister bar abutting against the adjacent faces of adjacent links, when the chain is moving in a straight line but one of which links will disengage such bar when the chain turns around its support.

12. A machine for making wire fabric and the like, including a series of transversely extending twisting mechanisms having each a bar for supporting the parts of the twisting mechanisms, and endless chains to which said twisting mechanisms are secured in succession, the links of said chains being arranged in a plurality of series side by side and alternating in relative positions and to one vertical surface of each of which links a twister bar is secured and the opposite vertical surfaces of such links abut against the opposite side of the next twister bar when the chain moves in a straight line so that each twister bar will be clamped between the vertical portions of adjacent links in each chain.

13. A machine for making wire fabric and the like, including a series of transversely extending twisting mechanisms having each a bar for supporting the parts of the twister mechanism, a pair of circular chain supports, a pair of sprocket wheels, endless chains operating on said sprocket wheels to which said twister bars are secured in succession, each of said chains having two series of L-shaped links offset from each other so that there will be space between the angular projections of said links, a twister bar located in the space between the angular

projections of adjacent links and arranged so that when the chain travels in a straight line said bar will be pinched between the angular projections of the adjacent links, means for securing said bar to the face of the angular projection of one of each pair of links, and a third set of links pivotally connected with and overlapping the adjacent pairs of each of said series of links above mentioned, substantially as set forth.

In witness whereof, I have hereunto affixed my signature.

JOHN W. DWIGGINS.