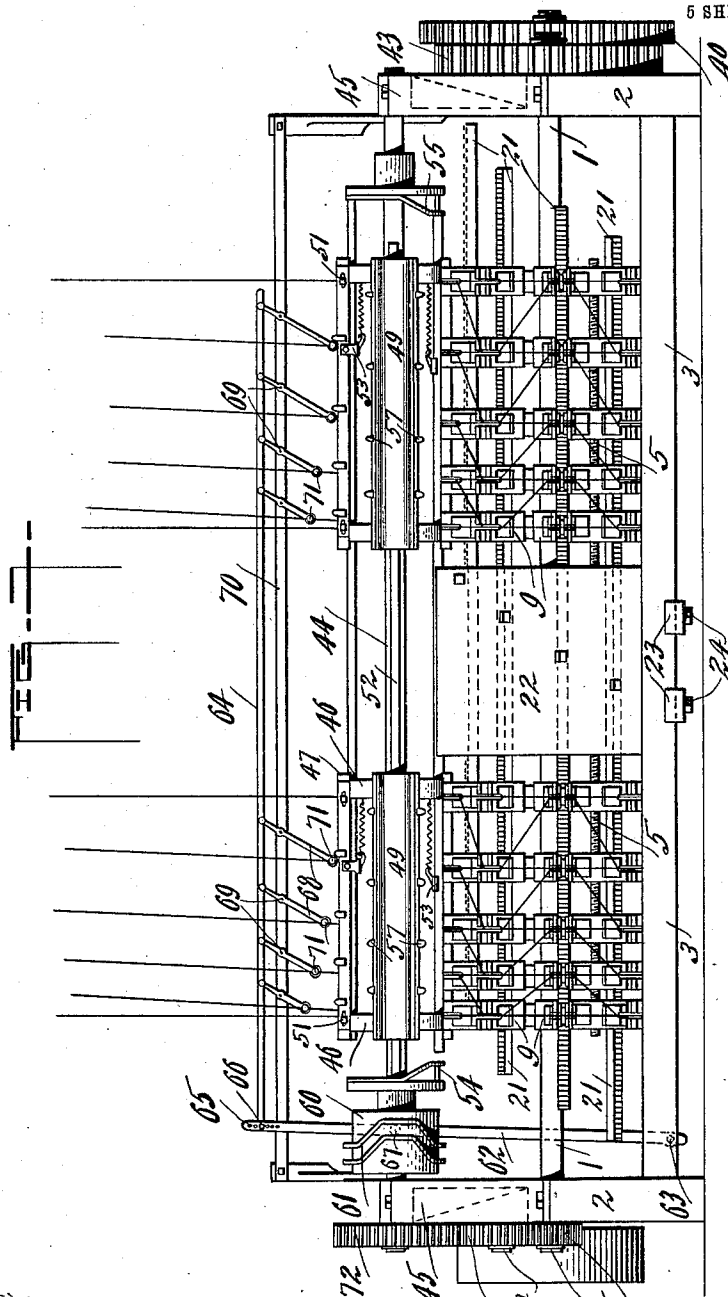


J. L. CLAUDIN.
WIRE FENCE MACHINE.
APPLICATION FILED MAY 20, 1904.

1,041,742.

Patented Oct. 22, 1912.

5 SHEETS—SHEET 1.



Witnesses:-
C. E. Stone
J. L. Fuller

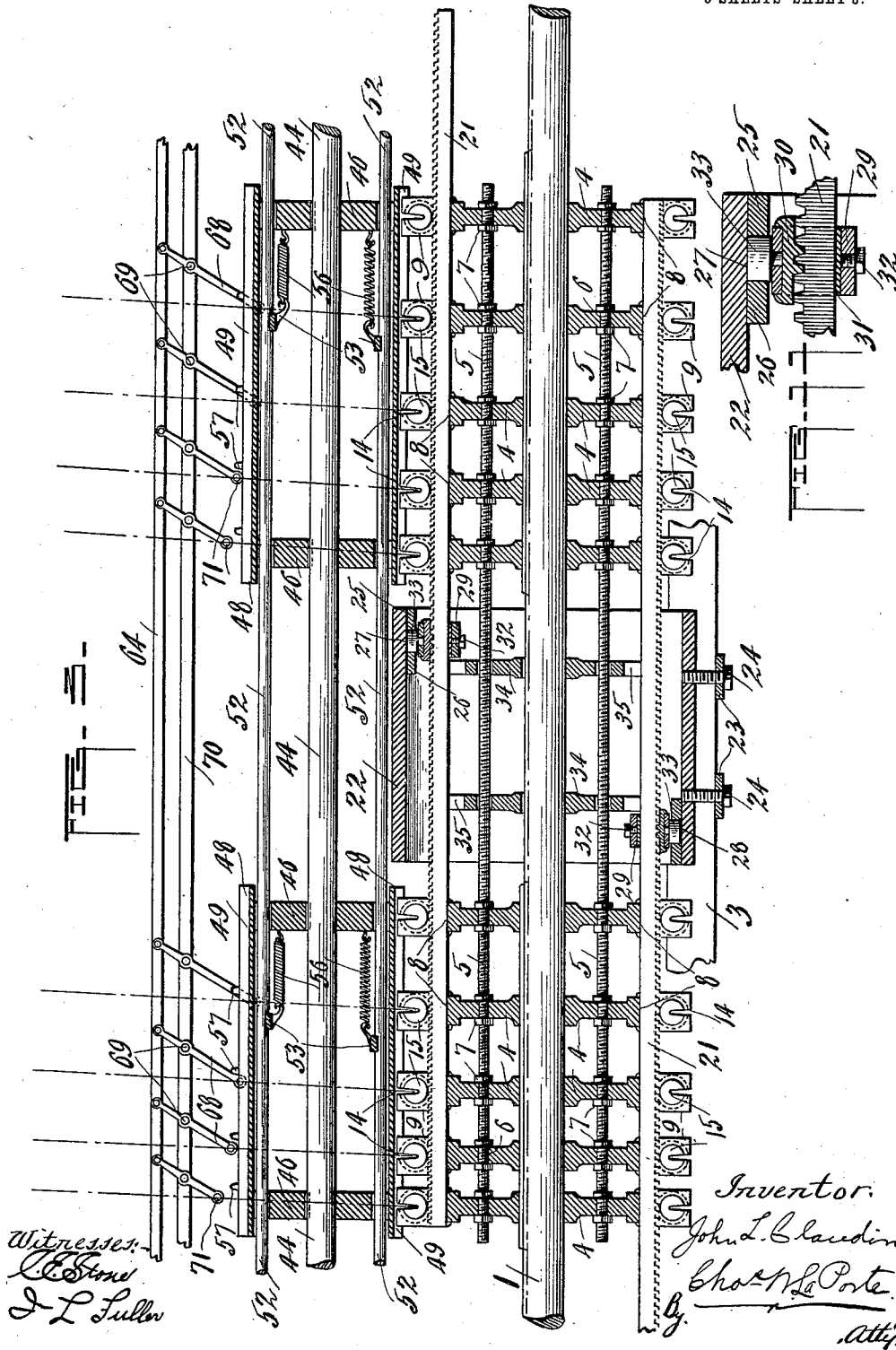
Inventor.
John L. Claudin,
By: Charles La Porte, Atty.

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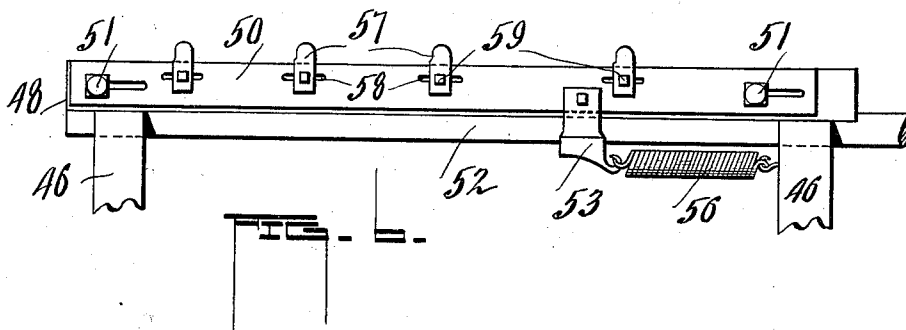
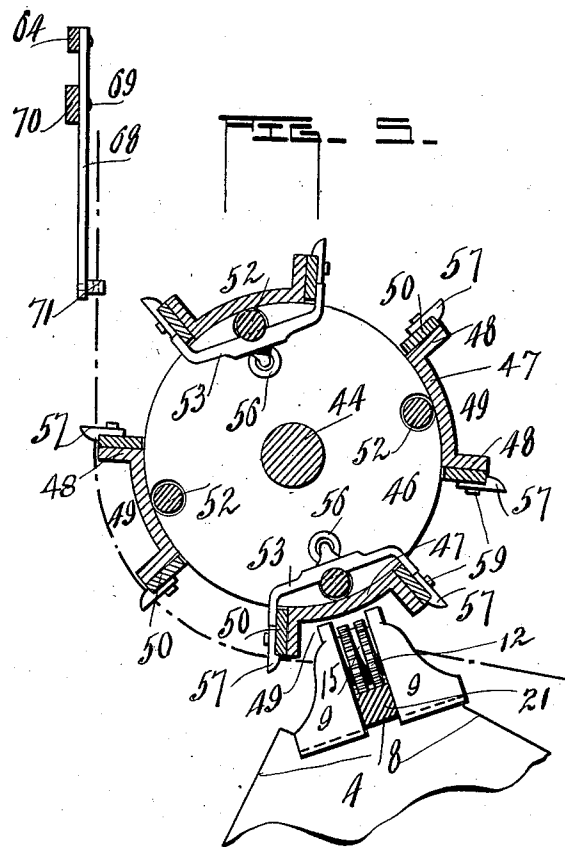


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5 SHEETS—SHEET 4.



Witnesses:
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D. L. Fuller

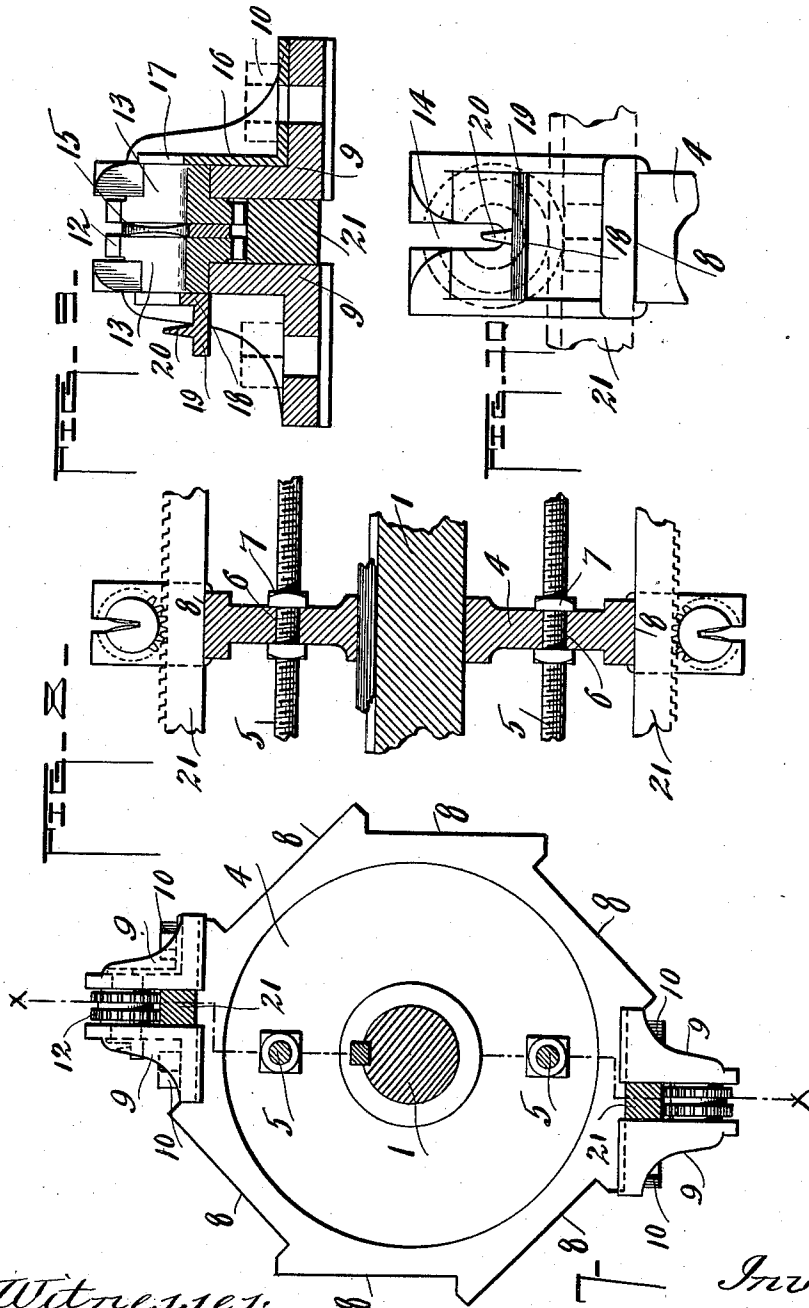
Inventor.
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5 SHEETS—SHEET 5.



Witnesses:
C. E. Stone
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Inventor:
John L. Claudin
Chas. W. La Porte
By _____, atty.

UNITED STATES PATENT OFFICE.

JOHN L. CLAUDIN, OF MORTON, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO INTERLOCKING FENCE COMPANY, OF MORTON, ILLINOIS, A CORPORATION OF ILLINOIS.

WIRE-FENCE MACHINE.

1,041,742.

Specification of Letters Patent.

Patented Oct. 22, 1912.

Application filed May 20, 1904. Serial No. 208,824.

To all whom it may concern:

Be it known that I, JOHN L. CLAUDIN, a citizen of the United States, residing at Morton, in the county of Tazewell and State of Illinois, have invented certain new and useful Improvements in Wire-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.

This invention has reference to machines for the making of wire fence fabric and has for its object a machine for the continuous manufacture of such fabric, as compared to machines which have an intermittent movement, that is, where a certain amount of fabric is intertwisted and the twisting devices stopped during the pulling out of the fabric.

The machine is applicable for the manufacture of wire fencing substantially similar to that shown in my application for patent bearing Serial Number 202,164, dated Apr. 8, 1904. However, the styles of fencing which may be manufactured are many and by reference to the above application, I do not intend to limit myself to that particular form, but cite it to show one of the styles which may be made by the machine.

The invention has for its further object a revoluble frame or drum, consisting of a shaft on which is mounted a series of disks the peripheries of which are provided with a series of flat faces. The disks are secured on the shaft through a spline and groove connection to adapt the said disks to be laterally adjustable, and on the flat faces thereof are detachably secured twister sections.

A further object of the invention is a revoluble frame comprising a shaft and a series of disks supporting a series of twister sections mounted in detachable journals which are secured to flat faces forming the periphery of the disks, and in the provision of reciprocally disposed rack-bars movable longitudinally across the peripheral faces of the disks and adapted to intermesh with the twister sections; and in the provision of means for intermittently reciprocating such rack-bars for the purpose of rotating the twisting devices intermittently during the continued rotation of the shaft.

A further object of the invention is in constructing a revoluble frame which comprises a shaft and two sets of disks mounted for rotation on said shaft. Each set of disks consists of a series of independently adjustable disks and the same support a series of twisting devices. The adjustment of such disks is for the purpose of graduating the distance between the meshes to facilitate in using one machine for making fences of varying widths or heights. The construction of a machine wherein are provided two sets of disks, carrying twisters, is designed to manufacture two rolls of fence at one operation of the machine, and with the disks being adjustable there may be manufactured at one operation of the machine, two rolls of fence which may vary in height, the means for operating the twisting devices carried by one series of disks serving the purpose to actuate the twisting devices of the second series and simultaneous with the actuation of the first mentioned series.

The invention has for its further object a rotating frame comprising a shaft on which is mounted for rotation therewith a series of heads or disks, each of which supports a series of twisting devices, and the arrangement of the twisting devices on each succeeding head is such that the twisters are arranged in longitudinal rows. It consists, further in the provision of a series of rack-bars adapted to be reciprocated and intermeshing with the twister sections upon each succeeding head; and also in the provision of a series of longitudinally movable rack-bars, one for each of the rows of twisters and engaging the twisters of each row. Also in the provision of means attached to each of said bars, adapted during the continued rotation of the frame to engage and follow the face of a cam, to facilitate in reciprocating the rack-bars in opposite directions and thereby impart movement to the twisters.

The invention has for its further object a revoluble support, twisting devices mounted in circumferential and longitudinal rows on said support; a series of pivoted shifting members, and means for oscillating all of the members simultaneously; a revoluble frame supporting a series of reciprocally disposed devices having a predetermined

movement and adapted to cooperate with the shifting members to facilitate in guiding and holding strand wires after the same have been shifted and for the purpose of retaining them in position to be engaged by the twisting devices as they move into position and to permit the shifting devices to be moved in an opposite direction and in advance of the guiding means on the revolving frame. And the invention consists of means for oscillating the shifting members and in the provision of suitable devices for actuating the guides of the revoluble frame.

The invention comprises in addition, certain details of construction to be hereinafter more fully described, and illustrated in the accompanying drawings which form a part of this specification, in which:

Figure 1 is a greatly reduced front elevation of a machine embodying my improvements; Fig. 2 is an elevation from one side of the machine as shown in Fig. 1 and somewhat enlarged over said figure; Fig. 3 is a longitudinal section, of about the same scale as that shown in Fig. 2, of the revoluble heads, the means for reciprocating the rack-bars to actuate the twisters and illustrating the guiding devices and shifters. The gearing for actuating the shaft supporting the heads and the devices for actuating the guides and shifters have been omitted; Fig. 4 is a cross section through the revoluble frame and is taken at one end of a casing or cylindrical member in which is arranged the helical cam by means of which the rack-bars are reciprocated; Fig. 5 is a cross section through the revoluble frame supporting the reciprocating wire guides, also showing its relative position in side elevation with reference to the twisters on the revoluble frame, and the wire shifting members; Fig. 6 is a side elevation of a portion of the revoluble frame supporting the reciprocating wire guides, one of said guides being shown; Fig. 7 shows an enlarged side elevation of a head or disk and the arrangement of the flat faces in its periphery, and showing the manner of supporting the twisting devices in the detachable journals. For the purpose of illustration, only two sets of twisting devices have been shown; Fig. 8 is a cross section on the line $x-x$ of Fig. 7; Fig. 9 is a cross section on an enlarged scale, showing the journals which support the twisters, also showing a twister in cross section and guard plates attached to the journals to retain the wires to their centers; Fig. 10 is an elevation looking at one of the faces of the journals shown in Fig. 9; Fig. 11 is a detail in cross section and enlarged, showing means which engages the helical cam and causes the reciprocating of the rack-bars, also showing the manner of connecting this means to the rack-bars.

The machine consists of a shaft 1, dis-

posed horizontally and journaled at its opposite ends in substantially duplicate frame parts 2, the frame parts being connected and braced by the braces 3, which also serve a further purpose.

On the shaft 1, which is one of the essential elements of a revoluble frame or drum, is carried a series of heads or disks 4, arranged as shown in Figs. 1 and 3 in two sets. There is no limitation placed upon this arrangement, as the heads may be disposed in one or more sets, and there may be as many in a set as is desired. The two sets of heads are for the purpose of utilizing the operative parts of one machine to actuate the two sets of heads for the manufacture of two distinct rolls of fence, which may or may not be of the same height, as will become apparent. The heads are locked relative to the rotation of the shaft by means of a spline and groove connection, and adjacent heads or disks 4 are positioned on the shaft 1, relative to each other and retained in such a position or adjusted by means of two or more longitudinally disposed thread bars 5, which pass through the entire series of heads or disks 4, and openings 6 in the bodies thereof. Upon the thread bars 5 and disposed adjacent to the opposite faces of each head are the adjusting and lock nuts 7. Thus it will be seen, that the position of a head or disk 4 or a series of heads may be adjusted longitudinally or laterally on the shaft 1, by adjusting the position of the nuts 7, thereby changing the position of any one or all of the heads, and retaining them in such adjusted position or positions. The same arrangement for adjusting the heads may apply, to one head, a series of heads, or a series arranged in two sets, as shown in the drawings.

The peripheries of the heads or disks 4, are arranged with a series of flat faces 8, and may be in number to suit the need of the machine. Detachably attached to each of the flat faces 8 of the heads 4 are a pair of brackets 9, which by the machine bolts 10 are secured to the heads, and adapt the same to be quickly and easily removed. Each bracket 9 forms a bearing for opposite hub portions of a twister 12 which is journaled in the brackets 9. The twisters, each comprise the half sections 13 having toothed peripheries and slotted body and hub portions, and the brackets 9 having the wire grooves or slotted portions 14, extending down into their bodies to a point approximately the center of the twisters; and the sections 13 are connected by inserting the slotted plate or disk 15 between them, the slot in the plate 15 being of such a contour as to form a wedge to clamp a wire or wires inserted into the slots. To the outside faces of each of the brackets is attached a guard plate. To the front bracket is attached a

substantially angular plate 16, retained in position by the machine bolt 10, and that portion of the plate adjacent to the slot 14 of the bracket is slotted as at 17 to correspond thereto. The guard plate which is attached to the rear bracket is indicated as 18 and has an extension 19 which is provided with a short pin or stud 20 extending up in front and removed a short distance from the slot in the bracket and twister. The stud 20 of the guard plate 18, when two or more wires are inserted into the twister, serves to regulate the length of the twist of such wires, and the guard plate 16 serves, as the twister is rotated, to retain the wires to their center in the twister.

21 denote longitudinally disposed rack-bars, one for each longitudinal row of twist-ers. The rack-bars are in number to correspond to the number of twist-ers on a head 4, and reciprocate across the flat faces 8 thereof. The disposition of the brackets 9 and the twist-ers journaled therein is such as to form a groove or channel for the carrying of the rack-bars and guide the same in their movement as they intermesh with the toothed portions of said twist-ers (see Figs. 3, 8 and 9). During the rotation of the shaft 1 and the heads 4 and at a given point in the movement thereof, the rack-bars are successively actuated or reciprocated which is for the purpose of imparting an intermittent rotation to the twist-ers. By reference to Figs. 1 and 3, it will be noted that the movement of the bars 21 is from right to left, and during this movement it is adapted to intertwist any wires which may be in the twist-ers; and when a twist has been formed or a sufficient number of turns imparted to the twist-ers, the bars have a reverse movement imparted to them which returns the twist-ers to their original positions. During the rotation of the frame, the twist-ers in each succeeding row are brought into a position with their slots uppermost to receive wires which are intended to be intertwisted, and upon the depositing of the wires, devices which will be described are brought into play to reciprocate the rack-bars and rotate the twist-ers. At the finish of the twist, the twist-ers are in position with their slots pointing downwardly and this permits the removal of the twisted fabric, when the rack-bars are reversed to return the twist-ers to their receiving positions.

Disposed between each set of heads or disks 4, or at the end of one set of heads if making a single roll of fencing, is shown a drum or cylindrical member 22, which is supported on the beams 3, and retained in a fixed position on said beams by means of the straps 23 and the bolts 24, which pass through the straps and are screwed into the wall of the drum, see Figs. 3 and 4.

Attached to the inner face of the drum 22

and disposed circumferentially is a helically disposed cam ring formed in two sections 25 and 26, and the ends thereof overlapping. The upper end of the section 25 is placed on the inner face of the drum, upon the right hand side thereof, looking at the drum from the front, approximately above the shaft 1, and carried forwardly and around the inner face of the drum, terminates at the lower left hand side of said drum. The section 26 begins short of the terminus of the lower end of section 25 and together therewith forms the short channel 28; it is carried up and around the inner rear face of the drum to a point forward of the starting of the section 25, and together therewith forms a short channel 27.

On the rack-bars 21 is secured the sleeve 29. The manner of securing is by means of the toothed plate 30 having portions engaging the sleeve 29, and teeth which engage the teeth of the rack-bars; there is also provided the filling plate 31 between the lower face of the rack-bar and the sleeve, and a bolt 32 is passed through the lower portion of the sleeve and engages the plate 31, and by this means secures the sleeve in a fixed position on the bar 21. To the upper face of the sleeve 29 is journaled a roller 33; these rollers are adapted to enter the channel 27 formed by the sections 25 and 26, and during the rotation of the shaft and heads the rollers will be caused to follow adjacent to the left face of the section 25 and draw the rack-bars to the left and at the lower end of the section 25 the rollers will enter the channel 28 and engaging the right wall of the section 26, will follow adjacent thereto and reverse the movement of the rack-bars until the said rollers again enter the channel 27.

It is intended that the curve of the section 25 at the start shall be abrupt to insure the gripping of the wires by the twist-ers, and the lower portions of the sections form a substantially straight channel to give the twisted fabric ample time to remove itself from the twist-ers during the continued rotation of the frame. On the shaft 1 and within the drum 22 are carried disks 34 arranged with a series of ears 35 and attached to coinciding ears of both disks are the short bars 36. These bars 36 lie adjacent to and parallel with the rack-bars and serve as a guide and brace for the sleeve 29 during the reciprocation thereof. The disks are also provided with openings 37 through which pass the thread bars 5.

The power device for actuating the shaft 1, is through the shaft 38 which receives its movement through a belt and pulley connected to some suitable source of power. On one end of the shaft 38 is carried the pinion 39 intermeshing with a gear 40 on a counter shaft 41. Power is imparted from

a pinion 42 on the shaft 41 to a gear wheel 43 on the shaft 1.

As intimated in the preamble of this specification, there are provided shifting and
5 guiding devices for controlling the feeding in of wires to the revolving frame and the twisters thereof. One of such devices shifts the mesh wire to adjacent horizontal strands as they appear on Fig. 1, and in the appli-
10 cation for fence patent referred to, and the other device acts as a guide and retainer to hold the wires in position preparatory to the twisting and during the interval when the mesh wires are being shifted to adjacent longitudinal strands. 44 denotes a longitudi-
15 nally disposed shaft, its opposite ends journaled in standards 45, supported by the frame 2. On said shaft 44, are carried two pairs of disks, or four heads 46, which com-
20 prise the opposite end supports of a revoluble frame. The frame further comprises a series of plates 47 their opposite ends secured to the heads 46. The plates 47 have the flanged walls 48 forming an opening
25 channel-way 49. And the position of each of the revoluble guides is above each of the sets of heads 4, and in their rotation they are so timed as to have the channel faces of the plates 47 coincide with the succeeding
30 rows of twisters as they are moved into position, for example see Fig. 5. Reciprocally carried by the flanged walls 48, is a bar 50, whose opposite ends are slotted and a bolt 51 passed therethrough and secured in the
35 walls 48. Alternate sets of bars 50 are adapted to be moved in opposite directions and returned. The method of moving the bars 50 is by means of rods 52 which pass through the heads 46, and to the rods 52 are
40 attached the arms 53 whose opposite ends pass up upon the outside of the plates 47 and are secured to the bars 50. On opposite ends of the shaft 44 are carried cams 54 and 55. The opposite cams are adapted to
45 actuate alternate rods 52, the alternate rods being of length and protruding beyond the end of their respective frames sufficient to engage and travel over the surface of said cams as their frames are revolved. To each
50 of the arms 53 is connected one end of a retaining spring 56, whose opposite ends are attached to a head 46. The arrangement of alternate springs is to hold the end of their respective rods 52 against its cam and when
55 said rod has moved off of the irregular face of the cam the spring returns the same to its position; in this way, as the guiding frames are revolved through the actuation of the shaft 44, as the channel faces 49 of the plates
60 come coincident with a row of twisters, the rod 52 controlling the movement of the bars 50 will be shifted by the cam. On each bar 50 is a series of fingers 57, which protrude beyond the end of the bar, the bar being
65 slotted as at 58, and bolts 59 for retaining

the fingers to the bars 50 permit of their being adjusted laterally. During the rotation of the frame carrying the bars 50, as the said bars 50 are reciprocated, the fingers 57
70 will engage a wire or wires which have been shifted into position and deposit the wires in the slots of the twisters of the revolving frame and retain them in such position until the twisters are actuated. The timing of the cams to move the rods 52 is such that
75 they will act synchronously with the deposit of the wire or wires by the shifter and be in position and doing their work when the shifter moves again to adjacent wires. The fingers 57 are adjustable on their sup-
80 ports to place them in position to receive the wires and to account for wear.

The shifting devices referred to comprise a cam wheel 60 carried on one end of the shaft 44, which is provided with the sinuous
85 formed cam-race 61. 62 denotes a lever of suitable length, its lower end pivoted at 63 to a frame part 3 and to its upper free end is adjustably attached the end of a shifting bar or rod 64; to adapt the lever 62 to
90 have an adjustable connection with the bar 64, the lever is provided with a series of bolt holes 65, and a bolt 66 serves to attach the lever and bar, as is apparent. To the body of the lever is attached a roller 67
95 which is adapted to travel in the cam-race 61 of the wheel 60. Thus it will be seen, during the rotation of the shaft 44, the sinuous portion of the cam-race 61 will cause the lever to be alternately shifted in oppo-
100 site directions, imparting a corresponding movement to the bar 64.

68 denote a series of oscillatory arms or fingers, arranged in two sets, one set for
105 each set of twister carrying heads and the same are pivoted at 69 to a cross-head or frame support 70, the opposite ends of which support are attached to the frames 45. The upper ends of the arms are pivotally attached to the bar or rod 64, and the lower
110 ends have pivoted or swiveled thereto, short studs or wire guides 71, through which mesh wires are passed as they are fed to the twisters.

The horizontal strand wires may be fed
115 to the twister heads on a line with the axial centers of said twisters when in their receiving positions; however, the selvage strands in this instance are fed from above. The mesh wires, or the wires which are
120 intertwined with and shifted to adjacent strands, are passed down through the guides 71 of the arms 68, and around the rotary guiding and retaining frame, as seen in
125 Figs. 1 and 5, and from thence into the twisters and following the contour of the twisting frame, being directed as a finished fabric to some suitable wrapping device, disposed either in front or in the rear of
130 the twisting frame. The manner of feeding

in the mesh wires and by giving to the same the reverse bends as appear in the figures, gives sufficient elasticity to the wires to permit the same to be interwoven without taking up all the spring in such wires, necessary to admit of the fabric having the expanding and contracting qualities due a woven fabric.

The shifting and guiding devices are so timed in their movements as to operate at alternate periods, to adapt the proper shifting of the wires and their retention by the guides to permit their being shifted in opposite directions to make a fabric, such as referred to. The making of a graduated fence fabric, such as the machine shown would manufacture, necessitates the arms 68 being of a length to properly place the wires which pass through their guides 71, and it is understood that if a uniform fence fabric were made, the arms 68 would all be of uniform length.

The manner of driving the shaft 44, upon which is carried the revoluble guide frame, is by means of the gear wheel 72 on one end of shaft 44, intermeshing with an idler gear 73 on the stud 74 which in turn intermeshes with a pinion 75 on the shaft 41, this latter shaft receiving its power in the manner heretofore stated.

It is obvious that various changes may be made and modifications and equivalents resorted to without departing from the spirit and scope of the invention herein.

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

1. In a device of the class described, the combination of a revoluble head, a series of independent and detachable supports mounted on said head and in rows around the same, a twister section journaled in each support, and means carried by said head and reciprocally arranged thereon for actuating said twisters.

2. In a device of the class described, the combination of a shaft, a head mounted on said shaft, a series of pairs of supports attached to said head, a revoluble twister journaled between each pair of supports, means for rotating said shaft and head, means for rotating each twister, and guards attached to the supports upon opposite sides of each twister.

3. A twister support, comprising a revoluble head, a pair of brackets attached to said head, a revoluble twister journaled between the brackets, and guard plates supported by said brackets upon opposite faces of the twister.

4. In a device of the class described, the combination of a revoluble support, a series of brackets detachably attached to said support, a revoluble twister mounted on each bracket, guard plates attached to said brackets,

and reciprocally arranged means for actuating said twisters during the rotation of the support.

5. In a device of the class described, the combination of a revoluble frame, a series of pairs of slotted supports detachably attached on said frame, a slotted twister revolvably mounted between each pair of supports, guard plates attached to said brackets in front of their slots, and reciprocally disposed means adapted to impart an intermittent movement to the twisters.

6. In a device of the class described, the combination of a shaft, a series of heads mounted on said shaft, means for adjusting the position of all or one of said heads on the shaft, twisters mounted on each head, and means for actuating the twisters during the rotation of the shaft and heads.

7. In a machine of the class described, the combination of a revoluble frame comprising a shaft, and a series of heads mounted thereon, thread bars connecting the heads in series and adapting the same to be adjusted on said shaft, and twisting devices mounted on each head.

8. In a machine of the class described, the combination of a shaft, a series of heads mounted thereon, thread bars connecting the heads in series and adapting the same to be adjusted, a series of twisting devices on each head, rack-bars for actuating said twisters, and means for actuating the said rack-bars.

9. In a machine of the class described, the combination of a shaft, a series of heads mounted thereon, thread bars connecting the heads in series and adapting the same to be adjusted, a series of twisting devices on each head, rack-bars for actuating said twisters, and means disposed at one end of the series of heads adapted to intermittently reciprocate the rack-bars to impart movement to the twisters.

10. In a device of the class described, the combination of a shaft, a series of heads mounted on said shaft and disposed in two sets, means for adjusting the position of each head relative to its adjacent heads, twisting devices on each head, and means for simultaneously actuating corresponding twisters on all the heads.

11. In a device of the class described, the combination of a shaft, a series of heads mounted on said shaft and disposed in two sets, means for adjusting the heads so that the space between the heads of one series is at variance with the space between the heads of the opposite series, twisting devices on each head, and means for actuating said twisting devices.

12. In a device of the class described, the combination of a shaft, a series of heads mounted on said shaft and disposed in two sets, a series of twisting devices arranged in

circumferential rows on each head and in longitudinal rows across the machine, a series of rack-bars adapted to actuate the twisters on the heads in each series, and means disposed between the two sets of heads adapted to reciprocate the rack-bars, for the purpose specified.

13. In a device of the class described, the combination of a shaft, a series of heads mounted on said shaft, twisting devices mounted on said heads, reciprocally disposed rack-bars adapted to actuate said twisters, a cylindrical and helical guide, and means on the rack-bars adapted to follow said guide in the rotation of the shaft and heads and thereby reciprocate said rack-bars, for the purposes specified.

14. In a device of the class described, the combination of a shaft, a series of heads carried by and revoluble with said shaft, thread bars connecting said heads in series and adapting the same to be adjusted longitudinally on the shaft, adjusting and locking nuts on the thread bars adjacent to the opposite faces of the heads, twisting devices on the heads, and means for actuating the twisting devices.

15. In a device of the class described, the combination of a shaft, a series of heads disposed in two sets carried by said shaft, twisting devices on each head, a series of rack-bars disposed and movable across the entire series of heads and adapted to actuate the twisting devices, a cylindrical head between the two sets of heads, a helically disposed ring attached to the inner face of said cylindrical head, and means attached to each rack-bar and engaging said head adapted when the shaft and head are revolved, to follow said helical ring and shift said rack-bars, substantially as specified.

16. In a machine of the class described, a revoluble frame, twisting devices journaled in said frame and disposed in longitudinal rows, and rack-bars reciprocally supported on said frame and adapted to actuate said twisting devices.

17. In a device of the class described, the combination of a shaft, a series of heads disposed in two sets carried by said shaft, twisting devices on each head, a series of rack-bars disposed and movable across the entire series of heads and adapted to actuate the twisting devices, a cylindrical member between the two sets of heads, a cam ring attached to the inner face of said member, means on the rack-bars engaging said cam ring, and supports on the shaft within said member adapted to guide the rack-bars during their movement.

18. In a machine of the class described, a revoluble frame, a series of revolvably supported twisting devices journaled on said frame, a series of reciprocally disposed rack-bars engaging said twisters, a cylin-

drical member disposed at one end of the heads, a cam ring attached to the inner face of the member, and a roller attached to the rack-bars and engaging the cam ring, for the purposes set forth.

19. In a fence machine, a revoluble frame, a series of twisting devices mounted on said frame, a guide for wires fed to said twisters, comprising a revoluble support and guides attached to said support.

20. In a wire fence machine, a revoluble support, a series of twisting devices mounted on said support, wire feeding devices comprising a series of oscillatory shifting members, means for shifting said members, and a revoluble guide provided with a series of reciprocally arranged guiding members.

21. In a wire fence machine, a revoluble support, a series of twisting devices mounted on said support, a wire feeding device comprising a revoluble support provided with a series of reciprocally disposed guides, and means for reciprocating alternate guides in opposite directions.

22. In a wire fence machine, a revoluble support, a series of twisting devices mounted on said support, wire shifting devices comprising a series of oscillatory arms, means for shifting said arms, a revoluble frame, guiding bars reciprocally supported on said frame, and means for reciprocating alternate guides in opposite directions.

23. In a wire fence machine, a revoluble support, a series of twisting devices mounted on said support, a series of oscillatory wire shifters, a revoluble frame, wire guiding members on said frame, and means for alternately shifting the guiding members on the frame and oscillating the shifters.

24. In a wire fence machine, the combination with a frame and twisting devices mounted thereon, of a revoluble wire guide, comprising a shaft, heads mounted on said shaft, frames attached to said heads, guiding bars reciprocally attached to said frames, cams on said shaft, and means actuated by said cams adapted to reciprocate said guide bars, substantially as specified.

25. In a wire fence machine, a revoluble frame comprising a shaft, a series of heads on said shaft, and a series of twisting devices mounted and suitably spaced on said heads, a wire feeding and guiding device consisting of a revoluble frame having a series of channel faces adapted during the continued rotation of its frame and the twister carrying frame to coincide and overlie the twisters, and a series of reciprocating guiding members on said second mentioned frame, substantially as specified.

26. In a wire fence machine, a revoluble frame comprising a shaft, a series of heads on said shaft, and a series of twisting devices mounted and suitably spaced on said heads, a wire feeding and guiding device

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consisting of a revoluble frame having a series of channel faces adapted during the continued rotation of its frame and the twister carrying frame to coincide and overlap the twisters, a series of reciprocally disposed guiding members on said revoluble guide, and means having a predetermined movement adapted to shift wires in advance of the movement of the guides on the revoluble frame.

27. In a wire fence machine, a revoluble support, twisting devices on said support, a shaft, a revolving frame on said shaft having a series of reciprocally arranged guiding members, means for reciprocating said guides, a series of pivoted wire shifters, a lever adjustably connected with such shifters, a cam on the guide frame shaft, and means on the lever adapted to be actuated by the cam for oscillating the wire shifters.

28. In a wire fence machine, a revoluble frame, twisters mounted on the surface of the frame and in rows around the frame and also longitudinally of the frame, and a rack-bar in mesh with the twisters of each longitudinal row adapted to actuate their respective rows of twisters in succession.

29. In a wire fence machine, a revoluble frame, twisters mounted on the surface of the frame and in rows around the frame and also longitudinally of the frame, a rack-bar in mesh with the twisters of each row, and means for inaugurating the movement of the successive rack-bars at the same point in their travel to facilitate in the actuation of said twisters.

30. In a wire fence machine, a revoluble frame, twisters mounted on the surface of the frame and in rows around the frame and also longitudinally of the frame, a rack-bar in mesh with the twisters of each row, and means on said frame and common to all of said rack-bars for imparting longitudinal movement to said bars to successively actuate said twisters.

31. In a wire fence machine, a revoluble frame, twisters mounted on the surface of the frame and in rows around the frame and also longitudinally of the frame, a rack-bar in mesh with the twisters of each row, a cam disposed on said frame, and means operated by said cam for actuating said rack-bars and returning the same successively as the frame is revolved.

32. In a wire fence machine, a revoluble frame, a series of slotted-twister brackets supported on said frame, a rack-bar longitudinally movable through each row of brackets, a slotted twister revolvably mounted in each bracket and in mesh with said rack-bars, and means operating at a given point in the rotation of the frame for reciprocating the rack-bars and thereby rotate the twisters.

33. In a wire fence machine, a revoluble

frame comprising a shaft, supports mounted on said shaft to rotate therewith, a series of twisters mounted in circumferential rows on said supports, a series of longitudinally movable rack-bars on said supports, and means for inaugurating the movement of each succeeding rack-bar at the same point in their travel.

34. In a device of the class described, the combination of a shaft, a series of heads mounted on said shaft and disposed in two sets, a series of twisting devices mounted on said heads, reciprocally disposed rack-bars adapted to actuate said twisters, and means disposed between the two sets of heads for reciprocating the said rack-bars.

35. In a device of the class described, the combination of a shaft, a series of heads mounted on said shaft and disposed in two sets, each set of heads being spaced at graduated distances apart and a series of twisting devices mounted on said heads, reciprocally disposed rack-bars adapted to actuate said twisters, and means disposed between the two sets of heads for reciprocating the said rack-bars.

36. In a device of the class described, the combination of a shaft, a series of heads mounted on said shaft and disposed in two sets, a series of twisting devices carried by said heads and spaced apart thereon, a series of rack-bars reciprocally mounted on said heads and in engagement with the twisters which are in alinement on the heads of the two sets, and means for operating the said rack-bars.

37. In a device of the class described, the combination of a shaft, a series of heads mounted on said shaft and disposed in two sets, a series of twisting devices carried by said heads, a series of rack-bars reciprocally mounted on said heads and in engagement with the twisters which are in alinement on the heads of the two sets, and means for reciprocating the rack-bars to rotate the twisters in opposite directions during the movement of said shaft.

38. In a device of the class described, the combination of a shaft, a series of heads mounted on said shaft and disposed in two sets, a series of twisting devices carried by said heads, a series of rack-bars reciprocally mounted on said heads and in engagement with the twisters which are in alinement on the heads of the two sets, and means disposed intermediate the two sets of heads adapted to successfully actuate the said rack-bars and thereby impart movement to the twisters in engagement therewith.

39. In a machine for making wire fabric, the combination with a traveling twister, of means for rotating the twister in different directions during its travel.

40. In a machine for making wire fabric, the combination with a traveling twister, of

a reciprocatory rack geared thereto, and a cam arranged to reciprocate the rack to rotate the twister in opposite directions during its travel.

5 41. In a machine for making wire fabric, the combination with a twister mounted to travel in an endless orbit, of a rack geared to the twister, and means for reciprocating the rack to rotate the twister in opposite di-
10 rections during the travel thereof.

42. In a machine for making wire fabric, the combination with a rotary twister mounted to travel in an endless orbit, of a rack geared thereto, and a fixed cam opera-
15 tively related to the rack to reciprocate the same during the travel of the twister.

43. In a fence making machine, the combination of a series of rotatable heads, twist-
20 ers supported by the heads, means for rotating the heads, means for rotating the twist-
ers, and movable wire guides for transferring wire between two heads.

44. In a fence making machine, the combination of a series of rotatable heads, twist-
25 ers supported by the heads, means for rotating the heads, means for rotating the twist-
ers, and means for forcing the wires into engagement with the twisters.

45. In a wire fence machine, a fence form-
30 ing revoluble drum having at intervals longitudinally extending rows of twister brackets, each formed with a pair of oppositely located slotted plates, a longitudinally movable rack bar mounted in each longitudinal
35 row of twister brackets, a slotted and toothed twister wheel mounted in each bracket in mesh with said rack bar, and means for actuating said rack bar during the movement
40 of the drum.

46. In a wire fence machine, a fence form-

ing revoluble drum having at intervals longitudinally movable rack bars, slotted twister wheels mounted in mesh with said rack bars, and means for actuating said rack bars in succession while the drum is in motion.

47. In a wire fence machine, a fence forming drum having at intervals longitudinally movable rack bars, slotted twister wheels mounted in mesh with said rack bars, and means for revolving the drum and for actuating the rack bars while the drum is in motion.

48. In a wire fence machine, a fence forming drum having at intervals longitudinally movable rack bars, slotted twister wheels mounted in mesh with said rack bars, and means for actuating said rack bars and for returning the same successively while the drum is in motion.

49. In a wire fence machine, a fence forming drum having at intervals longitudinally movable rack bars, slotted twister wheels mounted in mesh with said rack bars, means for actuating said rack bars successively while the drum is in motion, and means for limiting the actuating movement of said rack bars.

50. In a machine for manufacturing wire fence, the combination of a rotary member for receiving the strands of wire, a second rotary member, means on the second rotary member to deliver wire to the first rotary member, and means to join the wires together to form the fence.

In testimony whereof I affix my signature, 75
in presence of two witnesses.

JOHN L. CLAUDIN.

Witnesses:

W. R. LACKLAND,

CHAS. W. LA PORTE.