

W. N. PARRISH.

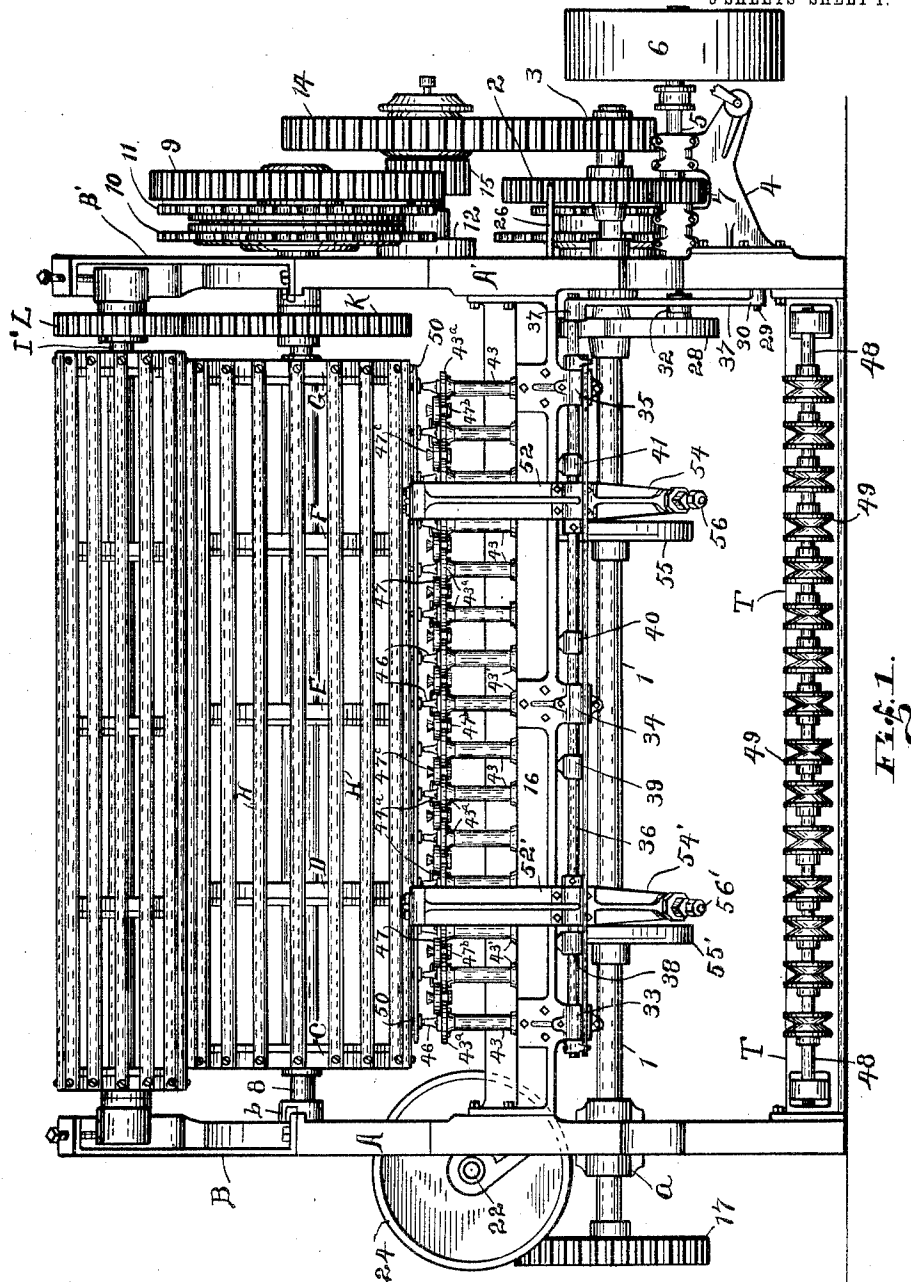
FENCE MACHINE.

APPLICATION FILED JAN. 12, 1911.

1,009,994.

Patented Nov. 28, 1911.

5 SHEETS—SHEET 1.



Witnesses:

Adelaide Kearns.

R. E. Randall.

Inventor
W. N. Parrish;
By *West H. T. Smith*
Attorney.

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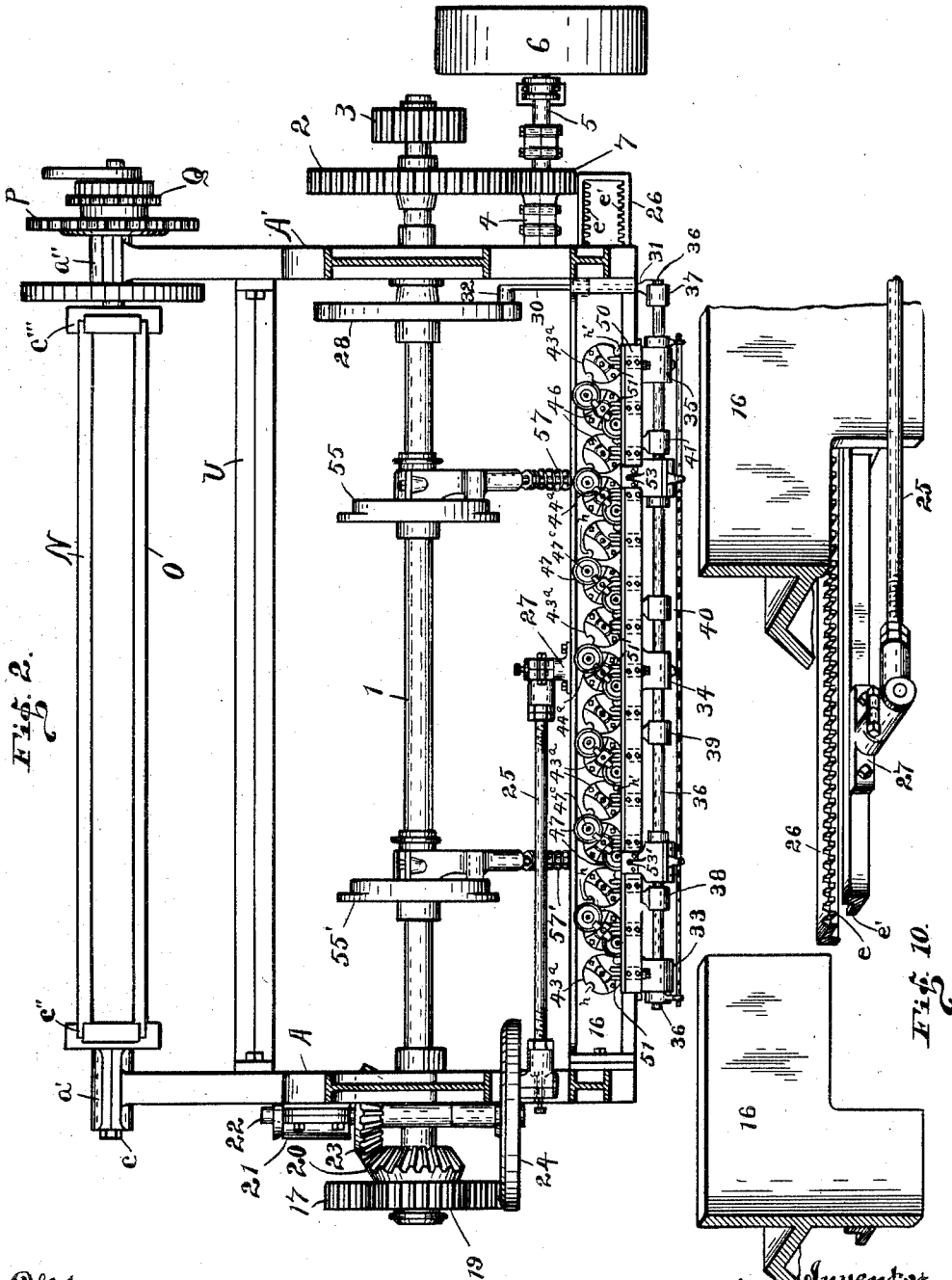


Fig. 2.

Fig. 10.

Witnesses:

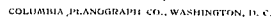
Odeliaide Kearns.
H. E. Handt.

Inventor,
W. N. Parrish;
Robert H. Handt,
Attorney.

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5 SHEETS—SHEET 4.

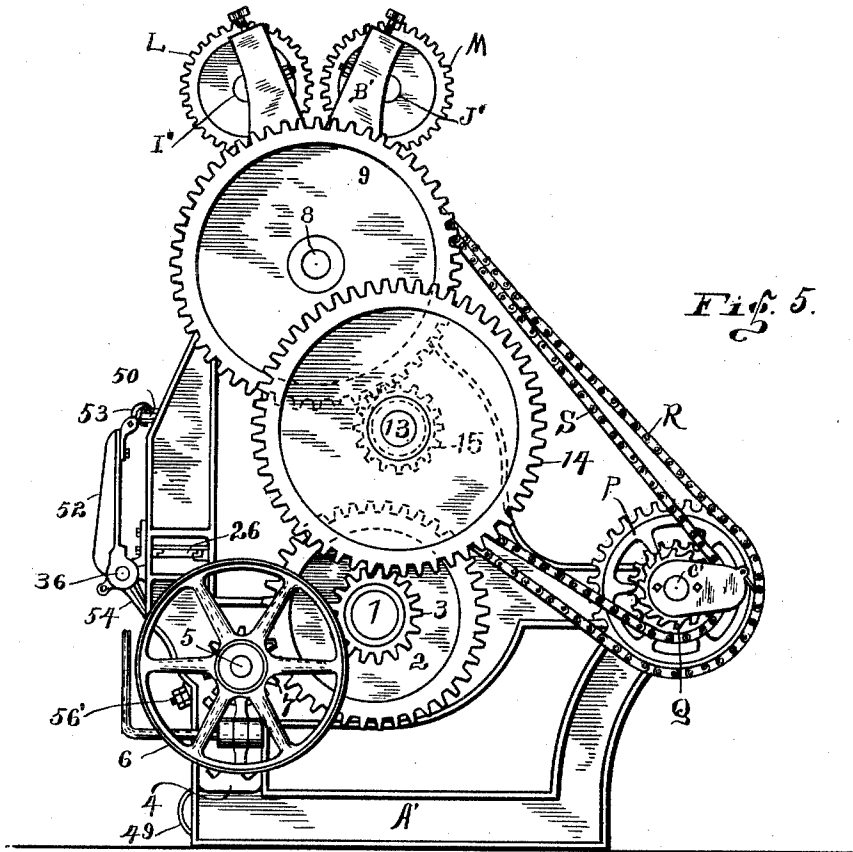


Fig. 5.

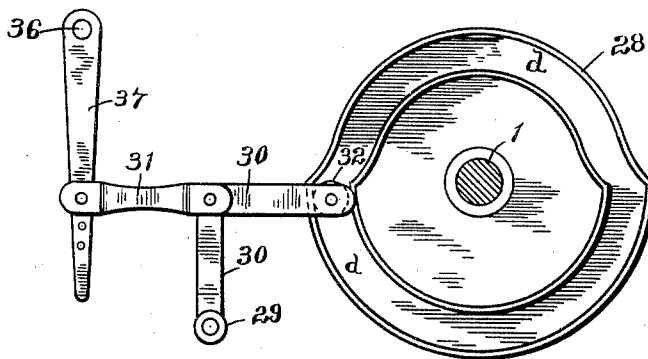


Fig. 6.

Witnesses:

Adelaide Lecane
R. G. Randle.

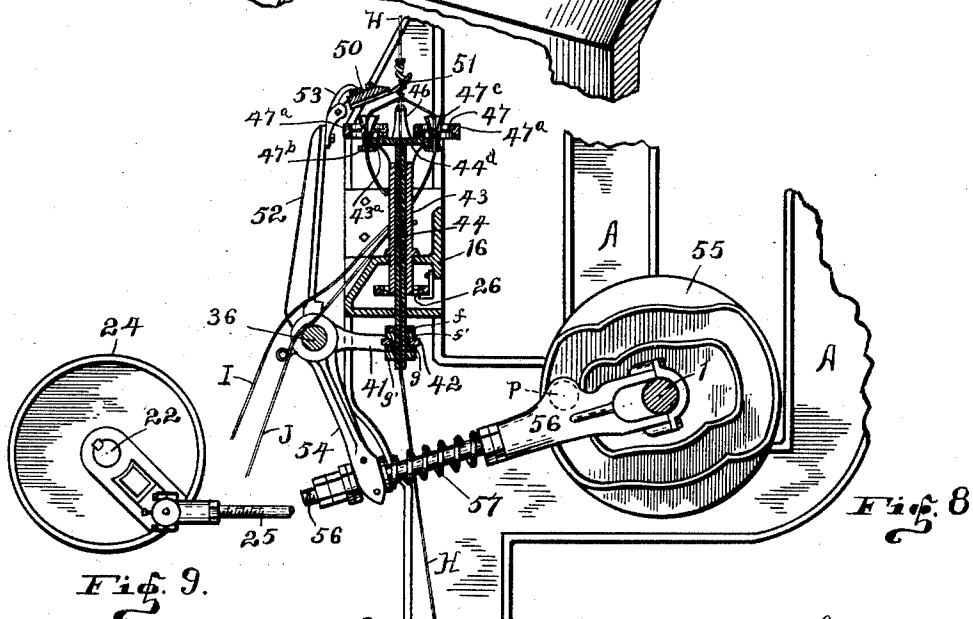
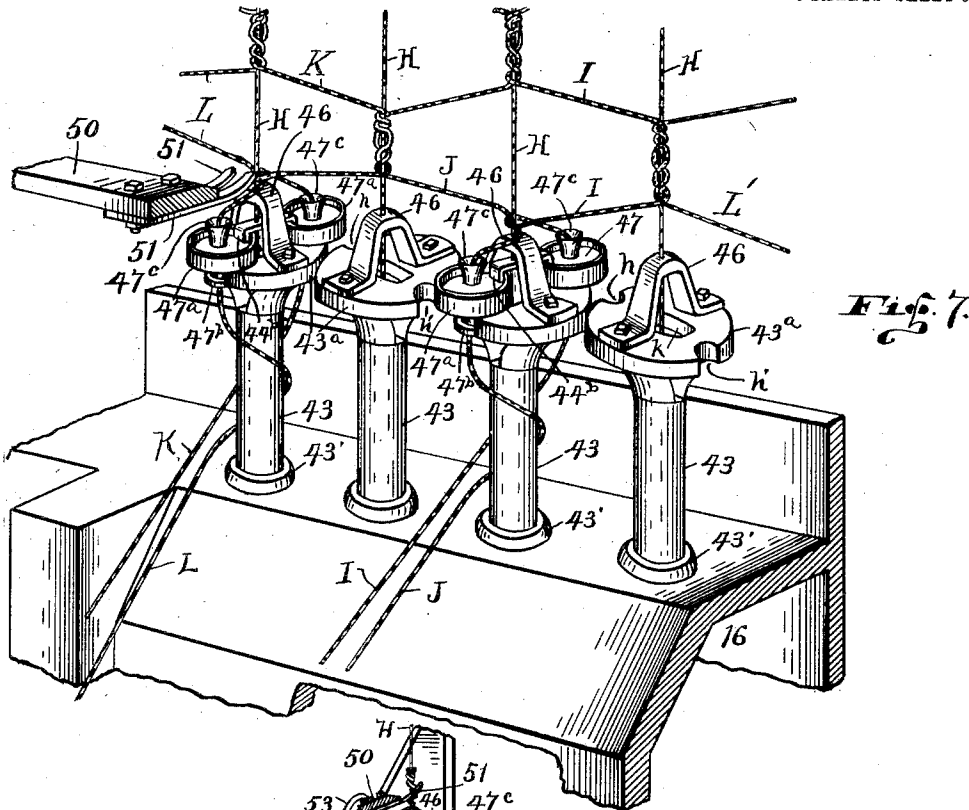
Inventor,

W. N. Parrish;
Robert W. Randle,
Attorney.

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5 SHEETS--SHEET 5.



Witnesses:
Colclaiide Kearns, H.
R. E. Kandle.

Inventor,
J. N. Parrishi;
By Robert W. Tamm,
Attorney.

UNITED STATES PATENT OFFICE.

WILLIAM N. PARRISH, OF RICHMOND, INDIANA.

FENCE-MACHINE.

1,009,994.

Specification of Letters Patent. Patented Nov. 28, 1911.

Application filed January 12, 1911. Serial No. 602,172.

To all whom it may concern:

Be it known that I, WILLIAM N. PARRISH, a citizen of the United States, residing at Richmond, in the county of Wayne and State of Indiana, have invented certain new and useful Improvements in Fence-Machines, of which the following is a true and comprehensive specification and exposition, being such as will enable others to make and use the same with exactitude.

This present invention relates to machines for making that style or type of wire fencing commonly known to the trade as "diamond mesh", in which the stay or cross wires are disposed at an angle with relation to the line wires, and in which the stay wires are disposed at two different angles with relation to the line-wires.

The object of this invention, broadly speaking, is to produce a fence machine in which the number of parts is reduced to a minimum, yet being capable of a high degree of efficiency both as to the finished product and to the expense of operation.

A more particular object is to provide a fence machine adapted to produce a continuous line of fencing of the character above stated without the necessity of stopping the machine, as heretofore in making diamond-mesh fencing the stay-wire material has been wound on spools, therefore when the wire was exhausted from the spools it became necessary to replace the empty spools with full ones, but in this construction no spools are required and the wires are all drawn from a continuous source of supply.

Another object is to provide means for making a fencing in which the stay-wires will be continuous throughout the entire extent of the fence.

Other objects and particular advantages of my present invention will be brought out in the following specification, and that which is new and useful will be set out in the appended claims.

One manner for the accomplishment of the objects of my invention, and that which in actual practice I have found to be the best and the most economical is shown in the accompanying drawings, in which—

Figure 1 is a front elevation of my entire machine complete. Fig. 2 is a sectional plan view, the section being as taken on line 2—2

of Fig. 3. Fig. 3 is a left-hand end elevation of the machine. Fig. 4 is a fragmentary detail view, showing a vertical section and taken centrally through certain of the twist-ers and the kindred mechanisms. Fig. 5 is a right-hand end elevation of the machine. Fig. 6 is a detail view of the single-cam mechanism. Fig. 7 is an isometrical detail of a portion of the bed-plate and certain of the twister mechanisms. Fig. 8 is a detail cross section, showing one of the double cams and its connections, and also showing the twister mechanism in elevation, also showing a fragment of one of the end members. Fig. 9 is a detail view showing the face of the pitman wheel, a portion of the pitman, and the adjustable means by which the pitman is mounted to the pitman-wheel. And Fig. 10 shows a portion of the bed-plate, the central portion of which is shown as broken away in order to show the racks, and showing the connection of the pitman to the rack-bar.

Similar indices denote like parts throughout the several views of the five sheets of drawings.

The invention consists in the several features of construction and operation which will be pointed out in concrete detail.

As is indicated in the drawings the several mechanisms are supported and carried by a framework which includes the two main end members A and A', each surmounted by an auxiliary end member designated B and B', respectively. The main members are adapted to stand vertically on a floor and they are spaced apart and are parallel with each other. The main members of the frame are connected rigidly together by means of the sill T, the cross tie U, and the bed-plate 16. Extending centrally through the members A and A' is the main shaft 1, the same being mounted in suitable boxings, as for instance boxing a, as shown in Fig. 1. Secured on shaft 1, outside member A', is the gear-wheel 2, and also secured on shaft 1, outside the gear-wheel 2 is the pinion 3. Mounted on the face of member A' is the bracket 4 which carries the short shaft 5. Mounted on the extreme outer end of shaft 5 is the pulley 6 through which power may be applied to the machine through the medium of a belt or the like connected to a motor, not shown.

Also mounted on shaft 5 is the pinion 7 which is in mesh with the gear-wheel 2 as shown. Mounted in suitable bearings at the juncture of the main members A' and A with their auxiliary members B' and B is the main bulldozer shaft 8, one of the bearings for said shaft being shown in Figs. 1 and 3, being indicated by letter b. Mounted on shaft 8, outside members A' and B' is the large gear wheel 9. And mounted on shaft 8, between gear-wheel 9 and the frame, are the two frictional-contact sprocket-wheels 10 and 11. Secured to the face of member A' is the head 12 (Fig. 1) which carries a stub-shaft 13 (Fig. 5) on which is mounted the large gear wheel 14 which meshes with pinion 3 above referred to. Also mounted on shaft 13 and formed integral and concentric with wheel 14 is the pinion 15 which meshes with gear wheel 9.

Secured on shaft 8 are the disks C, D, E, F and G, which are spaced apart along the length of shaft 8 between the end members of the frame of the machine. Connecting said disks, spaced apart, and parallel with shaft 8, are a plurality of bars or pipes secured in the peripheries of said disks, the same being indicated by letter H, thereby forming the main member of the bulldozer.

The two minor members of the bulldozer are made identical with each other, and they are made in the same manner as the main member of the bulldozer except that they are of less diameter, that is the disks thereof are smaller, the said minor members being spaced apart over the main member and both meshing therewith, all substantially as indicated in the drawings. The minor members of the bulldozer comprise the respective shafts I' and J' each of which is suitably mounted in adjustable bearings carried by the upper ends of members B and B'. Secured on shaft 8, between member G and the end member A' is the gear-wheel K, and meshing therewith but secured on the respective shafts I' and J' are the gear-wheels L and M, respectively. Mounted in suitable bearings a' and a'', carried on the rear extensions of the respective members A and A', is the reel which includes the two stubs, c and c', which operate in the respective boxings a' and a''. Secured on the inner ends of stubs c and c' are the respective heads c'' and c'''. Removably mounted in and connecting the heads c'' and c''' are the half-round bars N and O, around which the finished product of the machine is to be wound as it is completed. Secured on shaft c', outside the member A', is the larger sprocket wheel P, and the smaller sprocket wheel Q. Sprocket wheel P is connected to sprocket wheel 10 by the sprocket-chain R; and likewise sprocket-wheel Q is connected with sprocket wheel 11 by the sprocket chain S.

The bed-plate 16 which connects the end members A and A' is an important feature of this invention, it being formed hollow with an opening in the back thereof extending longitudinally thereof, the front face being beveled as indicated in Fig. 7.

Mounted on the left-hand end of shaft 1, that is outside the member A, is the gear-wheel 17.

Numeral 18 denotes a stub-axle extending out some distance from the face of member A being secured in a head, and it is located directly above shaft 1. Formed integral or connected and concentric with each other are the pinion 19 and the bevel-gear wheel 20 which are mounted to revolve on axle 18. Bevel-gear 20 faces inward, and pinion 19 is located in mesh with gear-wheel 17.

Carried by suitable boxings, as the boxing 21, secured to the face of member A, is the shaft 22 which is located at right-angles to shaft 1 and on same plane as axle 18. Mounted on shaft 22, to the rear of bevel-gear 20, is the corresponding bevel-gear 23 meshing with bevel-gear 20. Secured on the forward end of shaft 22 is the pitman-wheel 24. Openings are formed through member A allowing bevel-gear 23 and the pitman-wheel 24 room in which to operate and with shaft 22 near to member A. Adjustably pivoted to the face of said pitman-wheel 24 is the pitman 25, as indicated in Fig. 9.

Slidably mounted inside the bed-plate 16 and movable longitudinally thereof is the rack-bar 26 which has its central portion cut away in order to provide the two oppositely disposed offset racks e and e', the former being at a higher elevation than the latter.

Mounted at the center of the rear edge of the rack-plate 26 is the hanger 27 to which is pivoted the right-hand end of pitman 25. Said opening in the rear face of the bed-plate is for the purpose of allowing for the operation of said hanger 27, as indicated in Fig. 10, as the rack-plate is moved to and fro by the pitman.

Secured on shaft 1, near member A', is the cam wheel 28 which has a cam channel d formed in its right-hand face, as shown in Fig. 6.

Mounted on pivot 29, which is secured to the inner face of member A' and near the forward edge thereof, is the upwardly and rearwardly extending arm 30, the two parts thereof being at right angles to each other. Numeral 31 denotes a link which is connected at its rear end to the angle in the arm 30. The rear end of arm 30 carries a cam-roller 32 which operates in said cam-channel d.

Secured on the forward face of the bed-plate 16 are the three hangers 33, 34 and 35. Mounted to rotate in said hangers is the shaft 36. Secured to shaft 36 is the down-

wardly extending arm 37, the lower portion of which is pivoted to the forward end of said link 31.

5 Secured to and extending rearward from shaft 36 are the arms 38, 39, 40 and 41. Carried by the rear ends of all of said arms and extending along underneath and parallel with the bed-plate is the flat-bar 42, which I term the shifting bar which will hereinafter be explained.

10 Formed through the upper member of the bed-plate 16 is a line of apertures, in each of which is rotatably fitted a stem forming the body of the twisters, each of said stems being denoted by numeral 43. In this instance the several twisters or twisting devices, of which said stems are the basis, being identical with each other in construction, except in a few particulars which will be pointed out, they will all be described collectively, as near as possible, denoting like parts by like indices, and therefore a description of one or two will answer for all. Said stems 43 are each retained in place vertically by a collar 43' which rests on the top of the bed-plate. Said stems are formed hollow throughout their lengths, and neatly fitting therein is a tube 44. The upper ends of said stems 15 widen out thereby forming a head 43^a having a horizontal flat face on top as indicated. Secured on the lower end of each of said stems 43 is a small gear-wheel 45 each having a shoulder forming a collar on one side, as indicated in Fig. 4, the collar in each alternate gear being turned up while the others are turned down as indicated, thereby causing each alternate gear to mesh with rack *e*, while the others mesh with rack *e'*, from which it is manifest that as the rack-plate is moved endwise the said stems will be revolved,—each alternate stem revolving to the right, and the others to the left. Said tubes 44 extend down below the stems 43, each being disposed through an aperture therefor in the lower member of the bed-plate 16, and then extending down through suitable apertures therefor in the flat-bar 42 where and to which they are secured by lock-nuts *f*, *f'* and *g*, *g'*. A wire aperture is formed centrally and longitudinally through each of said tubes, as indicated, through each of which operates a line wire H. The heads 20 43^a are all located on the same plane, and remain so at all times, there being a space between each two heads. At two opposite points in the periphery of the heads 43^a there are formed two segmental indentations *h* and *h'*, as indicated in Fig. 7.

25 Mounted across over the top of each of the heads 43^a is an arch member 46, through the center of which is an aperture for the line-wire H. Formed through the center of each of the heads 43^a, at right angles to and

underneath the arch 46, is a slot *k* (Fig. 7) which is in line with said indentations *h* and *h'*, that is the ends of said slot point to said indentations. The upper end of each alternate tube 44 is somewhat different 70 from the others: One set having formed on its upper end a cross bar 44^a having at each end a downwardly extending lug 44^b, and also below said cross bar and formed integral with tube 44 is a key 44^c which fits 75 in said slot *k* to prevent the tube from turning but allowing it to be moved vertically. The upper ends of the other alternate tubes 44 have the cross-bars 44^a carrying at each end the upwardly projecting 80 lugs 44^c. For reasons which will be apparent the cross-bars 44^a are located on a higher level than the cross-bars 44^a, but all are adapted to be moved up and down in unison. 85

Numeral 47 denotes disks, there being one for each twister-head, each disk has a peripheral upwardly and downwardly extending flange thereby forming a rim 47^a. Extending down from the center of the disk 90 47 is a hollow nipple 47^b, said nipple also extending upward above the disk forming the upwardly flaring cup 47^c. Said disks 47 are adapted to be transferred from one to the other of said heads 43^a in the following 95 manner: Each of the heads 43^a is adapted to be rotated by said racks, moving first to the right and then to the left, each alternate head being rotated opposite to that of the head next thereto on each side thereof. For example, in Fig. 7, the first head to the right is shown as in position to rotate to the left while the head next thereto is rotating to the right, the latter carrying the two disks 47, there being a stay-wire I extending up through one of said disks and a second stay-wire J extending up through the other of said disks, said stay-wires being drawn from a continuous source of supply not shown. As shown in the drawings 100 the second head carrying two disks has already made one revolution to the right, and it is so geared that it will make another revolution to the right, thereby twisting the wires I and J around the line-wire H, which of course will loosely wind the wires I and J around the stem 43 of the second twister. After the wires I and J have been twisted twice around wire H in one direction then the reverse movement of the rack-bar 26 will cause the heads 43^a to rotate in the opposite direction, thereby twisting the wires I and J around wire H in the opposite direction from that first mentioned, and at the same time unwinding 105 the wires I and J from around stem 43, thereby forming a compound twist by which the stay wires are connected to each of the line-wires. Now when the disks have been returned to their first positions then two of 130

the indentations h , one of the first and one of the second heads as shown in Fig. 7, will be opposite to each other with the stem 47^b located therebetween, being inclosed by said indentations, there being a flange formed on the lower end of stems 47^b which will prevent the disks from being lifted upward and the rim of the disk 47 engaging the face of the head 43^a will prevent it from being moved downward. Now at this time the pitman 25 will be on a dead center at one limit of its stroke and at the same time the cam 28 will be in such position as to slightly turn shaft 36 causing the bar 42 to be raised which will lift all of the stems 44, thereby withdrawing the lugs 44^b from the rims of disks 47 and at same time causing the lugs 44^a to engage said rims of the disks. Now it is apparent that (Fig. 7) the first twister to the right will carry two disks 47 and the other twister next thereto will now become the idler the same as the first twister was in the action first described, thereby causing the two wires I and J to be changed to the first and the third twister and then completing their function of twisting K—J and I—L' (L' being the next stay wire to the right of the first line wire) around the respective third and first line-wires H, after which another transfer will take place as above stated, in which the heads then carrying two disks each will deliver them to the adjoining heads, giving one disk to the right and the other to the left, thereby causing the second twister to take one disk from the first head and another from the third head, and so on, which will transfer wire I, for instance, to be twisted from the first around the second wire H, while wire J will be transferred from the third to the second wire H, and in like manner wire K, for instance, will be transferred from the third to the fourth wire H, and wire L will be transferred from the next line wire to the left, which is not shown in Fig. 7 to the fourth line wire.

In order to hold the several twists while they are being made, particularly holding the upper part of the twist while the lower portion is being made reversely, I provide a means which I will now describe: Numeral 50 denotes a tracker-bar which is of substantially the same length as is the bulldozer. Said tracker-bar is located along in front of wires H and slightly above the twister heads above mentioned. Secured along said tracker-bar, opposite to each line-wire H, are pairs of fingers, there being one pair of fingers to stride each wire H. Pivoted on the shaft 36 are two upwardly extending arms 52 and 52'. Pivoted on the upper ends of said arms are the respective wrists 53 and 53'. Said wrists are secured to and carry the tracker-bar 50. Connected to the lower ends of said arms 52 and 52'

are the downwardly and rearwardly extending arms 54 and 54', respectively. Mounted on shaft 1 are the two cam wheels 55 and 55' each having a cam channel in its right-hand face in which operates a cam roller, as for instance the roller p which is shown in dotted lines in Fig. 8. Said cam-rollers are each carried by a pitman, 56 and 56' which are pivoted around shaft 1 and they have slot-like apertures for the shaft whereby they will have a forward and backward endwise movement as the cam-rollers travel in the channels of the cam wheels. The lower ends of arms 54 and 54' are loosely connected around the forwardly extending stem portions of the pitmen 56 and 56', respectively. The arms 54 and 54' are cushioned against the forward thrust of the pitmen by means of the helical springs 57 and 57', respectively, as indicated in Fig. 8. Said cams 55 and 55' are so timed as to press the fingers 51 into position to hold the twists being made at that time. By reason of the wrists 53 and 53' being hinged to the arms 52 and 52', respectively, I provide means whereby the wires may be drawn upward without danger of breaking or bending the fingers which may be in engagement with the twists being formed. Mounted between the lower forward corners of the end-members A and A' and in front of the sill T is a shaft 48 on which are revolubly mounted a plurality of independent sheaves 49, one for each line-wire H.

In practice the line-wires H are threaded into the machine by bringing them from the source of supply up back of the respective sheaves 49, then up through the tubes 44, the arch 46, each between a pair of fingers 51, then over the main bulldozer drum, and then down to the reel securing the ends of the wires to the bars N and O. Also a separate stay-wire is brought to the machine each from a separate source of supply, threading each up through a stem 47^b of a disk 47, and then out through the cup 47^c, from which latter it is drawn up and secured to a line-wire H, each stay-wire being secured to a separate line-wire. In this instance there are fifteen line-wires, or rather there are fifteen twisting heads, and there are fourteen stay-wires, or rather there are fourteen disks through which stay-wires may be disposed.

From the above it is apparent that twenty-nine wires may be employed in making the fencing, thereby requiring twenty-nine separate sources of wire supply, and these may be located at some distance from the machine.

When the machine is started it is apparent that the line-wires will be wound on the reel, that is around the bars N and O, and soon afterward the completed fencing will be wound on the reel, also the finished prod-

uct will be gripped between the large member of the bulldozer and the two smaller members thereof, by which it will be crimped besides being positively advanced at the required rate of speed.

Simultaneous with the above will be the operation of the several twisters: Each alternate twister-head will carry two disks 47, passing the two disks around a line wire,—twice in one direction and then twice in the opposite direction, which will form the tie or twists as shown in the upper portion of Fig. 7. On the completion of a twist or tie on each alternate line-wire then the twister-heads at that time holding two disks will release both of the disks, delivering one to its right and one to its left, to be taken up by the respective right and left twister-heads, whereby the previously alternate idle twister-heads will become the active twister-heads, each carrying two disks, and the next alternate line-wires, whereby the ties or twists are formed first on one and then on the next line-wire, as indicated in Fig. 17. It is evident that the above described operations may be continued indefinitely, the finished product being wound on the reel.

It should be particularly noticed that as soon as the upper half of the twists or ties is completed then the cams 55 and 55', acting on the arms 54, 54', 52 and 52' will throw the tracker-bar forward so that a pair of fingers 51 will engage the tie and prevent it from unwinding while the lower portion of the tie or twist is being made reversely.

It will be seen that the margins are formed in the same manner as above described except that only one length of stay-wire is coiled around the marginal line-wires at each intersection, but the marginal twisters operate in the same manner as the intermediate twisters while they carry but one stay-wire thimble, from which it will be noticed that the marginal meshes of the fence are but one-half the size of the other meshes. The twists on the marginal line-wires are formed in exactly the same manner as are the twists on the intermediate line wires but they are formed single except double as indicated.

If desired the twister mechanisms may be graduated—that is, placed at various distances apart—in place of being equally spaced, whereby each row of meshes will be formed of a different size from that of a part of or all of the others.

Having now fully shown and described my invention and its operation, what I claim and desire to secure by Letters Patent of the United States, is—

1. In a machine of the character set forth, comprising a suitable frame, a hollow bed-plate carried between the end members of the frame, a double rack-bar slidably mount-

ed inside the bed-plate and adapted to move endwise parallel with the bed-plate, a series of vertical twisters mounted on the bed-plate, a gear-wheel secured on the lower end of each twister and located inside the bed-plate and in mesh with said rack-bar, each alternate twister being geared to rotate to the left while the others rotate to the right, all of said twisters being rotated by the movements of said rack-bar, a plurality of disks each carrying a stay-wire extending therethrough, means whereby two of said disks are carried at one time around a line-wire by each alternate twister whereby the stay-wires carried by two disks are twisted around a line-wire,—one part of the twist being turned in one direction and the other part of the twist being turned in the opposite direction.

2. In a machine of the character described, comprising a suitable frame, a hollow bed-plate carried by the frame, a rack-bar slidably mounted inside the bed-plate, a series of vertical twisters mounted on the bed-plate, a gear-wheel carried on the lower end of each twister and located inside the bed-plate and in mesh with said rack-bar, each alternate twister being geared to rotate to the right while the others rotate to the left, a plurality of disks each carrying a stay-wire, means whereby two of said disks are carried at one time by each alternate twister, in order to twist two of said stay-wires at one time around a line-wire which extends through the twister, all substantially as set forth.

3. In a wire-fence machine, comprising in combination, a suitable frame having end members, a hollow bed-plate carried by and extending between the end members, a double offset rack-bar having its central portion cut away and having two oppositely disposed racks formed at different elevations from each other integral therewith, said rack-bar being slidably mounted in and movable longitudinally of the bed-plate, means for operating said rack-bar in proper time, a series of vertical twisters mounted on the bed-plate, a gear-wheel carried on the lower end of each twister and located inside the bed-plate and in mesh with said racks, each alternate twister being geared to one of said racks and the other alternate twisters being geared to the other of said racks of the rack-bar, a plurality of disks each carrying stay-wire material extending therethrough, means by which two of said disks are connected at one time to operate planetarily around a line wire which extends up through the twister twisting the stay-wires first in one direction and then an equal number of times in the opposite direction thereby forming a compound tie of two stay-wires in connection with one line-wire, all substantially as set forth.

4. In a fence-machine, in combination, a frame, a main shaft extending through the frame, a hollow bed-plate beveled at its forward upper edge and disposed parallel with
 5 said shaft, a double rack-bar carrying two oppositely disposed racks which are offset vertically with relation to each other and operative horizontally in and longitudinally
 10 of the bed-plate, means for moving the rack to and fro, a series of twist-ers adapted to be rotated alternately to the right and left by said rack, each alternate twister being geared to one side of said rack and the others to the other side of the rack, a disk
 15 for each intermediate twister, each disk being adapted to carry a stay-wire threaded therethrough, means whereby two of said disks are carried at one time by each alternate twister, and means for transferring
 20 said disks from one to another of the twist-ers, all substantially as shown and described.

5. In a fence machine, in combination, a frame, a bed-plate connecting the end members of the frame, a bulldozer carried by the upper portions of the frame and parallel with the bed-plate, a main shaft extending longitudinally through the machine, means for revolving said shaft continuously by
 25 power, a rack slidable endwise inside the bed-plate, a pitman for moving said rack, means for operating the pitman by power from said shaft, a plurality of vertical twister-heads extending above the bed-plate,
 30 a plurality of disks each carrying a stay-wire, means for attaching two of said disks at one time to each alternate twister, means for transferring said disks whereby two disks will be taken up by the other alternate
 35 twist-ers taking one disk from each head on each side thereof, all substantially as shown and described.

6. In a fence machine comprising a frame, a bed-plate-connecting the end members of the frame, a bulldozer carried by the upper portions of the frame and located parallel with the bed-plate, a main shaft extending longitudinally through the machine, means for revolving said shaft continuously by
 45 power, a reel for receiving the finished product, a rack-bar movable endwise in the bed-plate, a pitman for operating said rack-bar, means for operating the pitman by gears connected to said shaft, a plurality of
 50 twister-heads extending above the bed-plate, a plurality of disks each carrying a stay-wire, means for connecting two of said disks to each alternate twister-head to be carried around a line-wire which extends up through
 55 the twister-head, and means for transferring said disks,—delivering one to the twister-head on the right and one to the twister-head on the left to be carried by them around the other alternate line-wires, all
 60 substantially as described.
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7. In a fence machine, comprising a suitable frame having end members, a hollow bed-plate extending between the ends of the frame, a double offset rack-bar slidable endwise inside the bed-plate, means for operating the rack-bar by power, a series of twist-ers extending above the bed-plate and each having connection with said rack-bar whereby each alternate twister will be rotated opposite to the other alternate twist-ers, a plurality of disks each having a central aperture therethrough through which operates stay-wire material, a tube extending through the twister through which operates a line-wire, means for connecting two of said disks at one time to one twister, means whereby both of the disks are released at one time and transferred one to the right and the other to the left to be taken up in like manner by other twist-ers at the right and the left thereof and moved planetarily around a line wire first in one direction and then an equal number of times in the opposite direction, all substantially as shown and described.

8. In a fence machine, comprising in combination with a suitable frame, a bed-plate mounted horizontally in the frame, a double off-set gear-rack slidably mounted in the bed-plate, means for operating the gear-rack endwise, a plurality of twist-ers mounted on the bed-plate and each consisting of a hollow vertical stem, a tube fitting in said stem, a head formed on the upper end of said stem, a gear-wheel secured on the lower end of each of said stems, each alternate gear wheel being in mesh with the rack formed on one side of the gear-rack and the other alternate gear wheels being in mesh with the rack formed on the opposite side of the gear-rack, means whereby all of said tubes may be raised and lowered independent of the rotation of the twist-ers and in proper time with the movements of the gear-rack, means carried by each twister and the upper end of each of said tubes for engaging two disks and carrying them around planetarily therewith and releasing them at the proper time, and a plurality of said disks, each having an aperture therethrough for a wire, all substantially as set forth.

9. In a fence machine, a bed-plate, a plurality of twister devices mounted on the bed-plate, each comprising a stem, a head having a horizontal flat face formed on the upper end of the stem, the peripheries of said heads being located near to each other, there being two segmental indentations formed at opposite points to each other in the peripheries of each head, means for rotating said stems to the right and the left, each alternate stem being adapted to rotate opposite to the one next thereto, disks each having a peripheral flange extending out above and below and having a central hollow nipple integral

therewith extending below and above the disk, the upper part of said nipple being cup-shaped and the lower part thereof being adapted to be inclosed by two of said indentations in the peripheries of two of said heads, a tube fitting in said stem and extending therebelow, means for raising and lowering said last-mentioned tubes, a cross-bar formed on the upper end of each alternate tube, a downwardly extending lug connected to each end of said cross-bars to engage the upwardly projecting flange of a disk, the other alternate tubes having each a cross-bar located on a lower plane than the first-mentioned cross-bars, a lug extending up from each end of the lower cross-bar to engage in the lower flange of the disk, and means for preventing said tubes from turning with relation to their stems, all substantially as shown and described and for the purposes set forth.

10. In a wire fence machine the combination of a bed-plate, a plurality of twister mechanisms mounted on the bed-plate, each of said twister mechanisms being composed of a stem, a gear-wheel secured on the lower end of each stem, a tube extending through each stem and adapted to be moved up and down in said stem, the upper end of each alternate tube having a cross bar with a lug extending down from each end thereof, the upper end of the other alternate tubes having a cross-bar with a lug extending up from each end thereof, means for rotating the two alternate heads and tubes at the same time but in opposite directions to each other and alternately to the right and to the left, a plurality of disks two of which are adapted to be engaged at the same time by the two lugs which extend down from the bar of one set of tubes and after being rotated an equal number of times to the right and to the left with said heads to be delivered to the adjoining twister-heads, one being delivered to the right and the other to the left to be engaged by the upwardly projecting lugs of the adjoining twister-tubes, all substantially as shown and described.

11. In a machine of the character described, comprising a suitable frame, a hollow bed-plate carried horizontally between the end members of the frame, a double rack slidable endwise inside the bed-plate, the central portion of said rack being cut away and having gear-teeth formed in the inner opposite faces, the teeth on one side being located higher than are the gear teeth on the other side, a series of vertical twisters mounted on the bed-plate, a gear-wheel mounted on the lower end of each twister,

each alternate gear-wheel being located in mesh with the gear-teeth on one side of said rack and the other alternate gear-wheels being located in mesh with the gear-teeth on the opposite side of the rack, all of said twisters being thereby adapted to be rotated by the operation of the rack but at same time allowing certain of the twisters to rotate in one direction and others to rotate in the opposite direction, a plurality of disks each carrying a stay-wire extending there-through, means whereby two of said disks are carried at one time around a line-wire by each alternate twister by which the stay-wires carried by the disks are twisted around a line-wire, and by which one part of the twist is turned in one direction and the other part of the twist is turned in the opposite direction, a tracker-bar mounted in front and above the twisters, fingers carried by said tracker-bar, there being a pair of fingers to stride each line-wire, means for automatically operating said tracker-bar whereby one portion of the twists being formed will be engaged and prevented from unwinding while the other portion of the twists are being made, all substantially as set forth.

12. In a machine of the character described, comprising a suitable frame, a bed-plate carried by the frame, a rack-bar slidably connected to the bed-plate, a series of vertically disposed twisters mounted on the bed-plate, a gear-wheel attached to the lower end of each twister and in mesh with said rack-bar, means whereby certain of the twisters will be rotated to the right while the others are rotated to the left after which the first-mentioned twisters will be rotated to the left while the others are rotated to the right, a plurality of disks each carrying a stay-wire, means whereby two of said disks are carried at one time by each alternate twister in order to coil two of said stay-wires together around a line-wire which latter extends up through the twister, an arch extending over the top of each twister and adapted to allow a line wire to pass through the center thereof, and a tracker-bar carrying fingers adapted to engage the upper portion of the twists and hold them in place while the lower or reverse portions of the twists are being formed, all substantially as set forth.

In testimony whereof I have hereunto subscribed my name in the presence of two subscribing witnesses.

WILLIAM N. PARRISH.

Witnesses:

R. E. RANDLE,

ROBT. W. RANDLE.