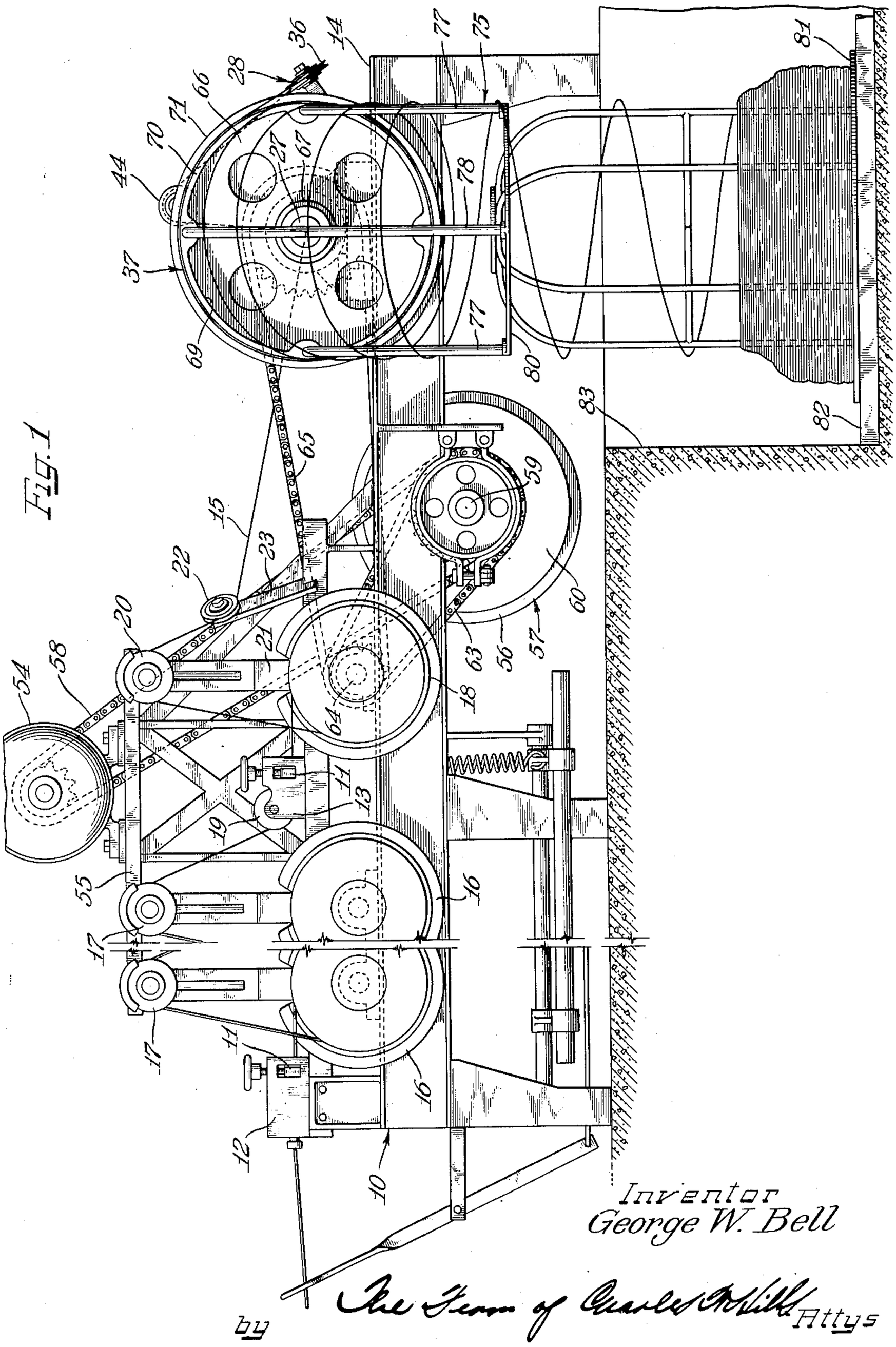
Feb. 24, 1953 G. W. BELL 2,629,564

WIRE-LAYING MACHINE

Filed June 23, 1949 3 Sheets-Sheet 1

Fig. 1



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WIRE-LAYING MACHINE

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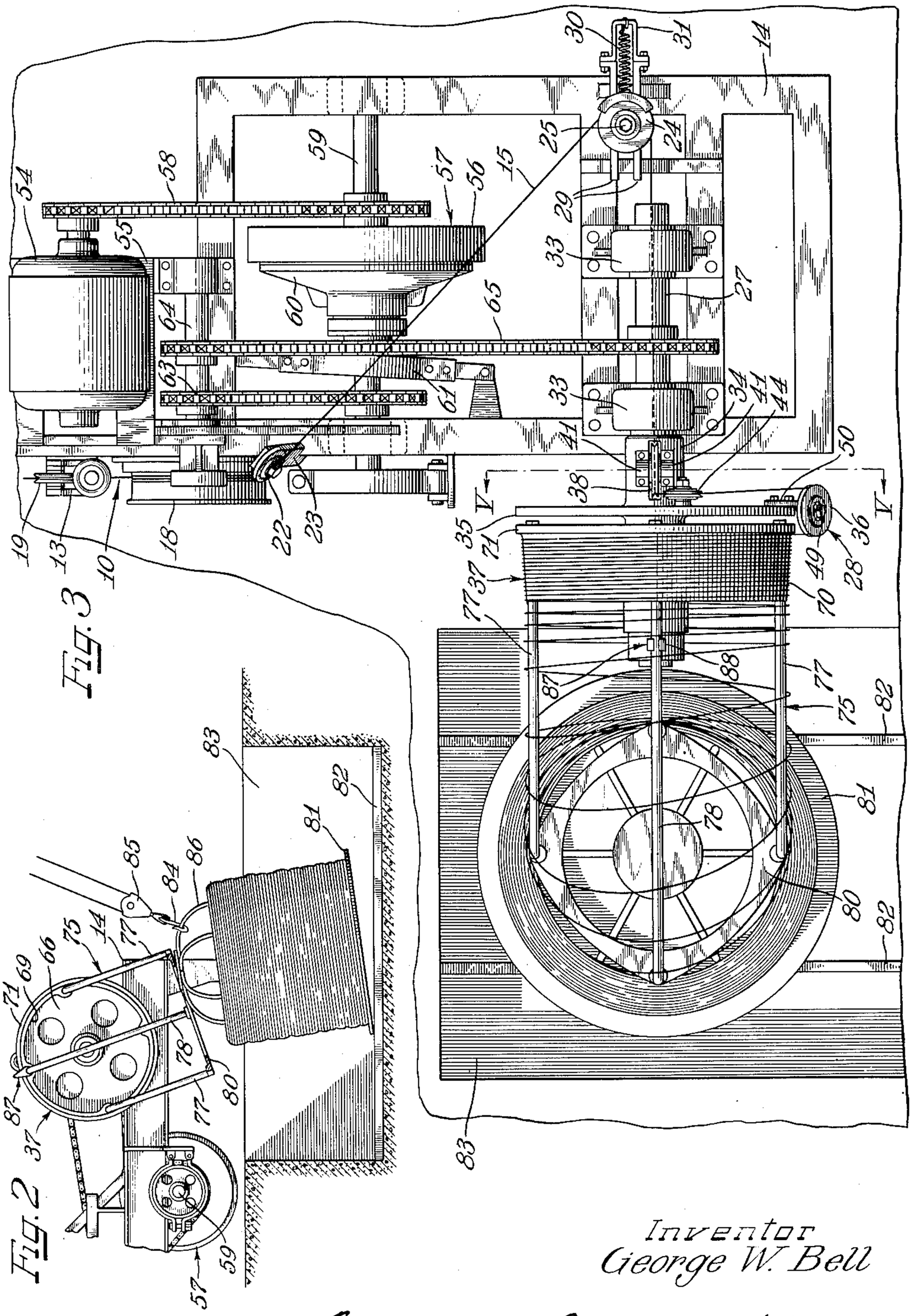

Fig. 3

Fig. 2

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WIRE-LAYING MACHINE

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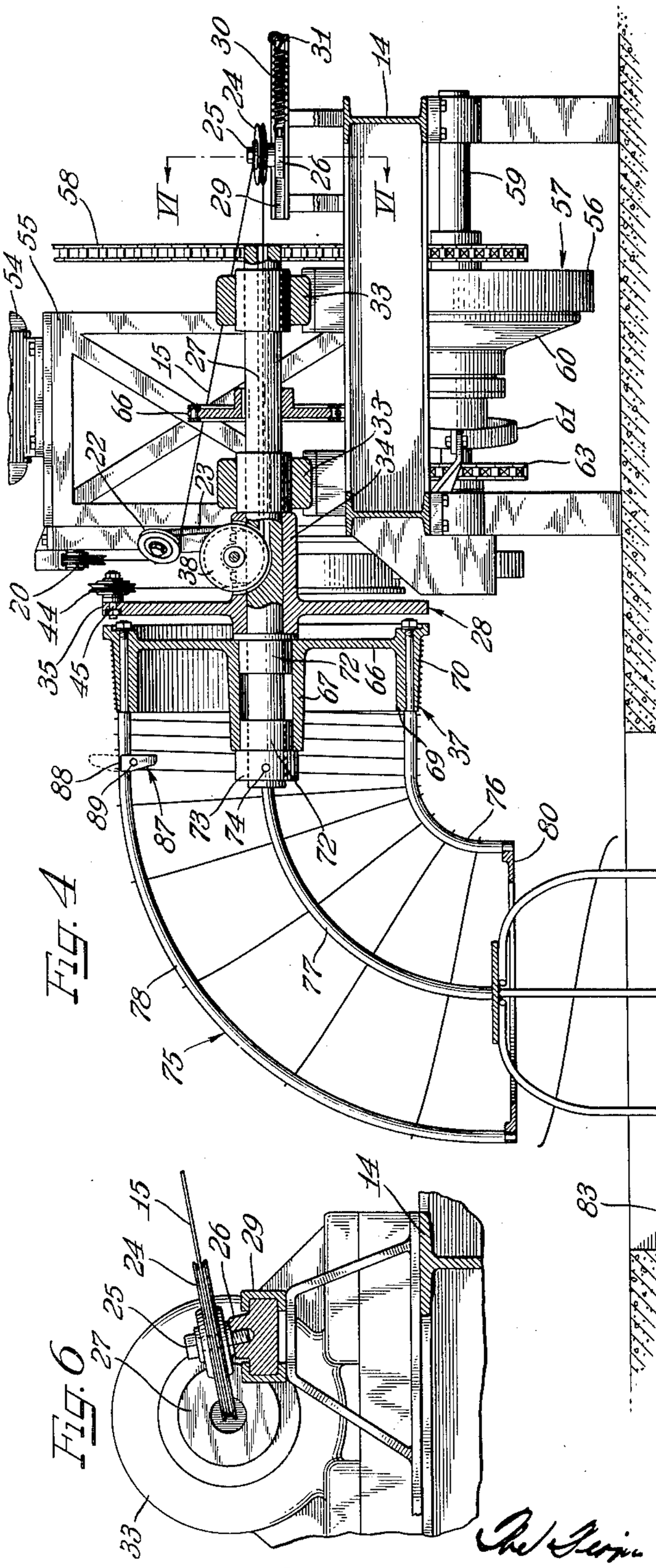

FIG. 4

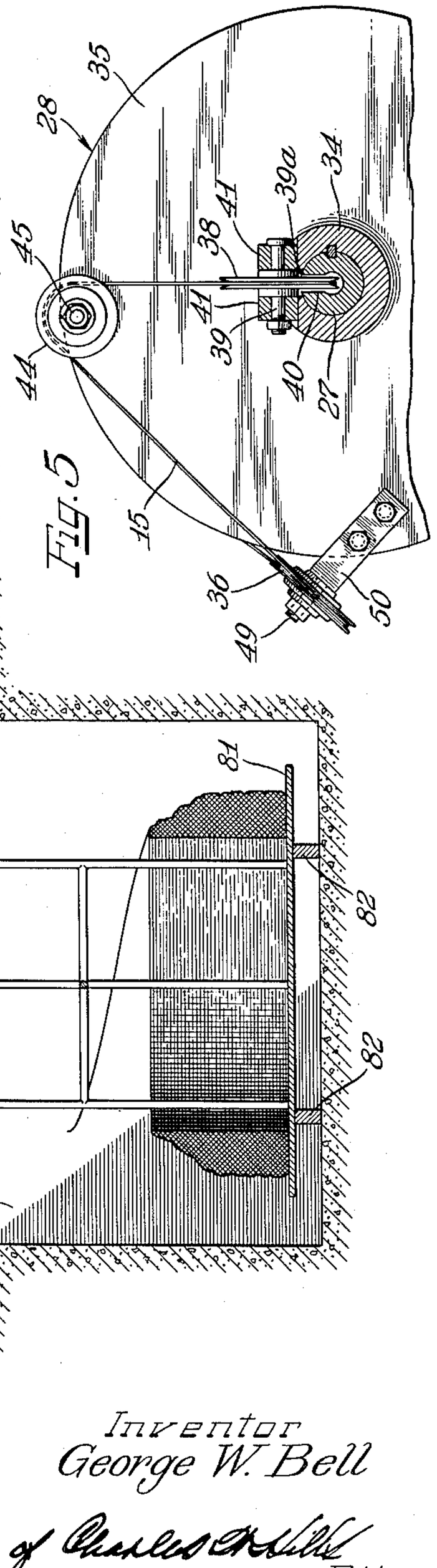

FIG. 5

FIG. 6

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UNITED STATES PATENT OFFICE

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WIRE-LAYING MACHINE

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Application June 23, 1949, Serial No. 100,941

12 Claims. (Cl. 242—82)

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This invention relates to improvements in wire laying machines, and more particularly relates to such a machine in which the coiled wire may be removed without stopping operation of the machine.

Heretofore, wire drawing machines have been provided with coiling blocks at the discharge end of the machine, upon which a finished wire is coiled. These machines and coiling blocks, however, have been so arranged that the machine must be stopped, to remove the coiled wire from the block, or else provision must be made for storing the wire during the removal of one coil from the block and the connecting of the end of the finished wire thereto, to permit the coiling of additional wire on the block. While the time required to snip the wire and remove the coil from the block and twist the leading end of the wire from the machine onto the block for winding additional wire thereon is only a matter of seconds, where a skilled operator is on the machine, the stopping of the entire machine, even for this short time, disrupts the drawing operation, and the storing of the wire in the form of a loop while snipping and removing the wire from the block and connecting the leading end of the wire thereto is frequently a source of difficulty, in that the wire is likely to become tangled, resulting in stopping of the machine until the tangled wire can be cut. The device of my present invention has as its object to overcome these difficulties by so arranging the coiling block that the wire may be continuously coiled thereon and removed therefrom without stopping operation of the machine and without making it necessary to store the drawn wire while removing the coiled wire therefrom.

My invention has as its principal object to provide a simplified form of wire-laying machine of a novel and simplified construction so arranged that the coiled wire may be removed therefrom without stopping operation of the machine.

A further object of my invention is to provide a wire-laying machine characterized by its ability to lay coiled wire on a receiving reel without stopping operation of the machine or the coiling operation, and by its ability of permitting the removal of the reel with the coiled wire thereon, for insertion of another empty reel, without stopping the coiling operation.

A more particular object of my invention is to provide a wire-laying device of a novel and simplified construction having a rotatable winding member which lays the wire on a coiling block, and having a coil transferring means forming a continuation of the coiling block and extending therefrom toward the ground, to guide and discharge the coiled wire from the coiling block beyond the end thereof by gravity.

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It is still a further object of my invention to provide an improved wire-laying machine in which the coiling block is pivotally movable with respect to the winding member about an axis parallel to the axis of rotation of the winding member, and wherein a coil transferring means extends from the coiling block and is directed toward the ground, to discharge the coiled wire unto a wire receiving reel, which block and reel are so arranged that the reel coiled with the wire may be removed without stopping the reeling operation, by pivotal movement of said coil transferring means about a horizontal axis effected by engagement of said coil transferring means with said reel, during removal thereof.

A further object of my invention is to provide a wire-laying device including a rotatably driven winding member and a coiling block extending therefrom and having an open coil transferring and guiding frame leading therefrom and directed to discharge the coiled wire beyond the end of said coiling block toward the ground, and having a stopping means on said frame selectively operable to permit the wire to coil thereagainst or to permit the wire to pass thereby for discharge into the ground, and movable along said frame as a predetermined amount of wire builds up thereagainst to regulate the size of the coil on said block.

These and other objects of my invention will appear from time to time as the following specification proceeds and with reference to the accompanying drawings wherein:

Figure 1 is a view in side elevation of a wire drawing machine showing a wire-laying device constructed in accordance with my invention at the discharge end thereof;

Figure 2 is a fragmentary view in side elevation of the wire-laying device drawn to a reduced scale showing how a reel of coiled wire may be removed therefrom without stopping the machine or the coiling operation;

Figure 3 is a plan view of the discharge end of the wire-laying machine shown in Figure 1;

Figure 4 is a transverse sectional view taken through the coiling block and wire-laying machine;

Figure 5 is an enlarged detail fragmentary sectional view taken substantially along line V—V of Figure 3; and

Figure 6 is an enlarged fragmentary vertical sectional view taken substantially along line VI—VI of Figure 4.

In the drawings, a wire drawing machine is shown, which is similar to that shown and described in application Serial No. 3,051, filed by me on January 19, 1948, so need only be herein shown and described insofar as is necessary to make my present invention readily understandable.

The wire drawing machine 10 includes generally a plurality of wire drawing die blocks 11 mounted in die block supports 12 and 13, 13 spaced along a main frame or table 14, the die block support 12 being at the entering end of the machine, and there being a plurality of die block supports 13, 13 spaced along the machine. Each die block 11 is of a conventional design well known in the art, and said die blocks have successively smaller wire drawing apertures (not shown) from the entering to the finishing end of the machine, so as to effect successive reduction in the diameter of the wire 15 traveling through the machine. Immediately in front of the first die block support 12, and immediately behind each of the succeeding die block supports, there is provided a reel or drum 16 around which the wire is wrapped and trained upwardly therefrom over a guide pulley 17. From thence the wire is trained angularly downwardly and forwardly under a guide pulley 19 mounted on a die block support 13 and guiding the wire to the die blocks therein. Each of these reels is power driven and each advance reel may be driven at a progressively increasing speed, to compensate for elongation of the wire during the drawing operation, and to provide a uniform tension on the wire from the initial to the final drawing operation. The drive connections to said drums are not herein shown or described, since they are no part of my present invention.

The unreduced wire is fed to the drawing machine from a suitable reel through the first die block support 12 and to the first die block 11, as shown in Figure 1. It is then trained around the first reel 16, for several turns, and upwardly therefrom over the guide pulley 17 and downwardly through the next succeeding die block and around the next roll 16 and upwardly therefrom, and downwardly through the next succeeding die block. The wire is trained in the manner just described to and through the last die block and around a reel 18 at the discharge end of the machine like the reels 16, 16. From thence the wire is trained upwardly and around a guide sheave 20 on the upper end of a standard 21 and downwardly therefrom around an angularly disposed guide sheave 22 on the upper end of a standard 23, extending upwardly from the frame 14 and disposed at a transverse angle with respect thereto, to position said guide sheave to guide the wire 15 diagonally across said frame 14. The wire is then trained around a guide sheave 24 at the opposite side of the machine from the reel 18 and spaced in advance of said reel.

The guide sheave 24 is journaled on a spindle 25, herein shown as being threaded in the upper end of a support block 26, and disposed at an angle to said block, to mount said sheave 24 at the angle of downward inclination of the wire 15 as it crosses the machine from the guide sheave 20 to said guide sheave 24 (see Figure 6). The groove of said sheave 24 is herein shown as being in alignment with the axial center of a hollow transverse shaft 27 to train the wire therethrough, from which it may be trained laterally to a winding member 28, rotatably driven by said shaft. Said support block 26 is slidably mounted in a pair of facing channeled guides 29—29 extending transversely of the frame and mounted thereon. A tension spring 30 is connected at one of its ends to a yoke 31 secured to and extending from the guides 29, 29 and at its opposite end to the support block 26, as shown in Figures 3 and 4, to urge said guide sheave in a

direction away from the hollow shaft 27 and maintain tension on the wire 15.

The hollow shaft 27 extends transversely of the frame and is journaled thereon in laterally spaced bearing boxes 33—33, mounted on and extending upwardly from said frame. Said shaft, as herein shown, extends beyond the opposite side of said frame from the guide sheave 24 and has a hub 34 of the winding member 28 secured thereto for rotation therewith. Said winding member, as herein shown, has a winding disk 35 extending from said shaft, with a winding sheave 36 mounted to extend across the periphery thereof and guide the wire from one side of said disk to the other, for winding on a coiling block 37, journaled on the outer end of the shaft 27. The wire is trained from the guide sheave 24 through the center of the hollow shaft 27 to a point adjacent the winding disk 35. From thence it is trained outwardly around a guide sheave 38 extending within registered slotted portions 39*a* and 40 of said hub 34 and transverse shaft 27, respectively, and having its groove in alignment with the axial center of said shaft. (See Figure 5.) Said shaft is mounted on a spindle 39, supported at its end in support blocks 41, 41 secured to a flattened portion of the hub 34 and on opposite sides of the slotted portion 39*a* thereof. From said guide sleeve 38 the wire 15 is trained radially outwardly around a guide sheave 44 extending parallel to the disk 35 and rotatably mounted on a spindle 45 secured to and extending from the side of said disk adjacent the frame 14, and hereinafter called the inner side of said disk. From said last-mentioned guide sheave, the wire is trained across the inner side of said winding disk to and around the guide sheave 36 straddling the periphery of the disk 35 of the winding member 28, and to the block 37, to which its free end may be attached. The guide sheave 36 is journaled on a spindle 49, secured to and extending from a support bracket 50, herein shown as being secured to the inner face of the winding disk 35 and extending outwardly from said winding disk at an acute angle to the periphery thereof, to position said guide sheave 36 to guide the wire over the periphery of said winding disk from one side to the other, to the coiling block 37, to which the free end of said wire may be attached and coiled thereon, upon rotatable movement of said winding disk 35 and guide sheave 36.

The transverse shaft 27 is driven from a motor 54 herein shown as being mounted above the die blocks 11 on a frame structure 55 extending upwardly from the frame 14. Said motor drives a driving member 56 of a clutch 57 through a chain and sprocket drive indicated generally by reference character 58. Said driving member of said clutch is journaled on a transverse shaft 59, which is suitably journaled at its ends in the frame 14 beneath the shaft 27. A driven clutch member 60 is connected to said shaft 59 and is engaged with said clutch member 56 for selectively driving the shaft by means of a yoke 61 operated by a suitable system of links and levers (not shown) for selectively driving said shaft. Said clutch 57 may be of any well known form such as is commonly used to selectively drive one member from another, and is no part of my present invention, so is not herein shown or described in detail. A chain and sprocket drive 63 serves to drive a parallel shaft 64 from the shaft 59 and herein shown as forming the drive shaft for the reel 18 of the wire drawing machine. The shaft 27 may be driven at such a speed as

will drive the winding member 28 and the winding sheave 36 at the speed of travel of the wire as it leaves said roll 18 by means of a chain and sprocket drive 65.

The coiling block 37 is shown as being of drum-like construction having a web 66 extending from a hub 67 thereof and having a flanged portion 69 extending perpendicularly to said web. Said flanged portion has an inclined or frustoconical outerface 70, inclined downwardly to the discharge end of said block, at a relatively flat angle. A retaining flange 71 is provided at the inner side of said block, adjacent the winding disk 35. Said coiling block is journaled on its hub on the projecting end of the transverse hollow shaft 27 on spaced bearing members 72—72 and is retained on said shaft by means of a collar 73 secured to the outer end thereof by a pin 74. The coiling block 37 is thus mounted on the projecting end of the hollow shaft 27 to permit said shaft to freely rotate with respect thereto, or to permit said coiling block to pivotally move about said shaft.

A coil transferring means 75 is provided to guide and transfer the coiled wire laid on said coiling block by the winding member 20 for discharge to the ground by gravity. Said coil transferring means is herein shown as being an open framework extending from the outer side of said coiling block in substantial alignment with the periphery thereof, and curving downwardly therefrom toward the ground. Said open framework may be formed in various ways, but is herein shown as being formed from a plurality of stakes 76, 77 and 78 extending from and mounted in the flange 69 of said coiling block (see Figure 4). The leading end of the wire may be twisted around one of said stakes, preferably the stake 78, to permit the rotatable disk 35 and sheave 36 to coil the wire on the upper part of said coil transferring means and block in an obvious manner. Each of said stakes extends outwardly from said coiling block and forms a continuation of the outer surface thereof and then is curved downwardly toward the ground, the stake 76 being closest to the ground being the shortest and curving about a smaller radius than the stakes 77, 77 and 78, and the stakes 77, 77 being of the same length and curving about the same radius to form an even downwardly curving continuation of said coiling block to guide the coiled wire therefrom to the ground. The lower ends of said stakes are mounted in a spider 80 of a substantially annular form to receive the upper end of a wire storing reel 81. Said stakes are so mounted in said spider that their outer sides are flush with the outer side of said spider to permit the coiled wire to freely pass thereby onto said reel 81.

The reel 81 is herein shown as being of well known form of wire storing reel, such as is commonly used to store and transport coiled wire from place to place, and is shown in Figure 2 as resting on slide rails 82—82 extending along the bottom of a pit 83. During the coiling operation said reel 81 rests beneath and is in alignment with the spider 80 and registers with the open portion of said spider to receive the coiled wire from said coil transferring means.

Figure 2 illustrates the removal of the reel 81 filled with wire from beneath the coil transfer means without stopping of the coiling operation. As shown in this figure, a hook 84 connected to a snatch block 85 of a hoist (not shown) is connected to a stake 86 of said reel adjacent the upper end thereof, to move said reel along

the slide rails 82 and at the same time lift it upwardly. Slidable and lifting movement of said reel along said slide rails will cause pivotal movement of the coil transfer means 75 and the coiling block 37 about the axis of the shaft 27 as said reel engages the inside of the spider 80. This will allow said reel to clear itself of said coiling block and coil transferring means and be lifted upwardly from the pit 83.

In a like manner, an empty reel may readily be placed beneath the spider 80 in registry with the open portion thereof to receive and store the coiled wire without stopping the machine, by lowering said reel onto the rails 82, 82 and sliding it therealong toward said spider 80, and by pivoting said coiling block about the axis of the shaft 27, by engagement of said reel with said spider, until said reel is in registry with the open portion of said spider, at which time said spider and coiling block will pivot downwardly to the position shown in Figure 4. Said reel will then be in position to have the coiled wire stored thereon.

A stop 87 is herein shown as being pivotally mounted on the upper guids stake 78 for movement into position to be abutted by the wire being laid on the coiling block 37, to hold the wire on said block and the transferring means 75, until the desired amount of wire has been coiled thereon. Said stop, as herein shown, is formed from two similar members having outwardly curved inner ends 88, 88 curved to fit partially around the stake 78, and clamped thereto, as by a nut and bolt 89 extending therethrough. Said stop is thus held to said stake by the frictional resistance of the curved ends 88, 88 thereagainst. Said stop may be turned to project outwardly from the stake 78 by hand, to permit the wire to be laid thereagainst, and to build up to the required size against said stop. As, however, the force exerted by the wire against said stop becomes greater than the resistance between said stop and the stake 78, said stop will gradually move downwardly along said stake and permit the wire being coiled to build up on said coil transferring means until said stop 87 is turned inwardly to the position shown in Figure 4, to permit the coiled wire to slide downwardly along the coil transferring means 75 onto the reel 81. The leading end of the wire may then be snipped or twisted from its connection to one of the stakes of the coil transferring means and the coil of wire may then slide along said coil transferring means onto the reel 81. As the coil is being transferred along said coil transferring means, the operator also snips the trailing end thereof and wraps the leading end of the next succeeding coil of wire onto one of the stakes of said coil transferring means, preferably the stake 78, to permit the coiling member 28 to lay another coil of wire on said coiling block.

In starting operation of the machine, when the wire has been drawn through the last die block 11 and wound around the reel 18, it may be trained from said reel upwardly over the guide pulley 20 and downwardly therefrom around the angularly disposed guide sheave 22 around the guide sheave 24 diagonally across the machine. From thence it may be trained through the center of the hollow shaft 27 and radially outwardly therefrom around the guide sheave 38 to a point adjacent the outer end of the winding disk 35 around the guide sheave 44, across said disk and around the winding sheave 36, straddling the

periphery of said disk, to the coiling block 37. The free end of said wire may then be attached to one of the stakes of the coil transferring means 75, preferably the stake 78, by twisting the end of the wire therearound. The machine may then be started, rotatable movement of the winding disk 35 and sheave 36 coiling the wire about the horizontal portions of the guide stakes of said coil transferring means and along the frusto-conical periphery of the coiling block 37, it being understood that as the wire is attached to one of said guide stakes, the stop 87 is moved to the outwardly extended position shown by dotted lines in Figure 4. The coiling operation may be continued by rotatable movement of said winding disk 35 and sheave 36 about said coiling block 37, the reaction caused by the weight of the depending portions of the coil transfer and guiding means being sufficient to hold said coiling block from turning with said winding disk 35 and to provide sufficient resistance to enable the wire to be coiled on said coiling block with the desired tension without tangling. When the required amount of wire has been wound on said coiling block against the stop 87, said stop may then be turned inwardly to the position shown in Figure 4 to permit the wire to move downwardly along said coil transferring means onto the reel 81. As the wire moves downwardly along said coil transferring means, the leading and trailing ends thereof are cut, and the end of the wire trained from the winding sheave 36 may be twisted around the stake 78 to offer resistance thereto and permit said winding disk 35 to lay another coil of wire thereon, the stop 87 being turned to the outwardly extended position shown by dotted lines in Figure 4, when the coil has been completely removed from said coiling block and transferring means by gravity.

It may be seen from the foregoing that a novel form of wire-laying or coiling machine associated with the discharge end of a wire drawing machine has been provided, which permits continuous operation of the wire drawing machine as the coiled wire is removed from the coiling block.

It may further be seen that the coiled wire may be removed from coiling block by gravity onto a wire storing reel at the discharge end of the coil transfer means directed from the coiling block toward the ground, and that this full reel may be removed to replace an empty reel therebeneath, without stopping the mechanism, by sliding the reel laterally and turning the coil transferring means about the axis of a hollow shaft 27 out of registry with the reel, by engagement of the reel with the coil transferring means, without stopping operation of the machine.

It may further be seen that a novel form of stop against which the coiled wire may be built upon the coiling block has been provided, which moves downwardly along the coil transferring means as the weight of the wire on the coiling block exceeds the friction resistance offered by said stop against said transferring means, and permits a coil of any desired size to be built up on said coiling block and coil transferring means, and also avoids the tendency of the coiled wire to fall from said coiling block and to tangle, during the coiling operation, in cases where the machine may be unattended for one reason or another, and makes it possible to coil amounts of wire on the coiling block and coil transferring means in excess of the capacity of the block where desired or necessary.

It will be understood that modifications and variations may be effected without departing from the scope of the novel concepts of the present invention.

I claim as my invention:

1. In an apparatus for continuously laying wire in a coil, a winding member journaled for rotation about a horizontal axis, means for rotatably driving said winding member, a guide member mounted on said winding member and having the wire trained thereabout and guiding the wire from one side of said winding member to the other and laying the wire on the other side of said winding member in the form of a coil upon rotation of said winding member, a coiling block extending from the other side of said winding member and underlying said guide member in position to have the wire coiled thereon by said winding member, and coil transferring means extending from and forming a continuation of said coiling block and directed at an angle with respect thereto toward the ground to guide and discharge the coiled wire from said coiling block beyond the end thereof by gravity.

2. In an apparatus for continuously laying wire in a coil, a winding member journaled for rotation about a horizontal axis, power means for rotatably driving said winding member, a guide member mounted on said winding member and extending from one side thereof to the other to guide the wire from one side of said winding member and lay the wire in a coil on the other side thereof, an axially disposed coiling block extending from the other side of said winding member and underlying said guide member in position to have the wire coiled thereon by rotatable movement of said winding member, and coil transferring means extending from said coiling block and including an open framework of outside dimensions substantially equal to the inside diameter of the coil on said block and secured to and forming a continuation of said coiling block and directed therefrom toward the ground at an angle with respect to said coiling block, to guide and discharge the coiled wire from said coiling block beyond the end of said coil transferring means by gravity.

3. In an apparatus for continuously laying wire in a coil, a winding member journaled for rotation about a horizontal axis, power means for rotatably driving said winding member, guide means on said winding member extending from one side thereof to the other side and guiding and laying the wire in a coil, an axially disposed coiling block extending from the other side of said winding member and having a receiving end aligned with said guide means to have the wire coiled thereon by said winding member and guide means upon rotatable movement thereof, and coil transferring means extending from said coiling block and including an open framework of outside dimensions substantially equal to the inside diameter of the coil and secured to said coiling block and forming a continuation thereof, said open framework extending outwardly from said coiling block and uniformly curving with respect thereto toward the ground and having a discharge end facing the ground, to guide and discharge the coiled wire from said coiling block to the ground by gravity.

4. In an apparatus for continuously laying wire in a coil, a winding member journaled for rotation about a horizontal axis, power means for

rotatably driving said winding member, said winding member having guide means mounted thereon and extending from one side thereof to the other to lay the wire on the other side of said winding member in the form of a coil upon rotation of said winding member, an axially disposed coiling block extending from the other side of said winding member in axial alignment therewith and underlying said guide means in position to have the wire coiled thereon by said winding member, coil transferring means extending from said coiling block and including an open framework of outside diameter substantially equal to the inside diameter of the coil, said open framework including a plurality of guiding members secured to said coiling block at one of their ends and extending longitudinally from said coiling block and uniformly curving with respect thereto toward the ground, and a stop mounted on one of said guiding members and manually movable into position to be abutted by the coil on said block, and held in position on said guiding member by frictional engagement therewith, and also being manually movable into position to allow the coiled wire to pass thereby for discharge therefrom to the ground.

5. In an apparatus for continuously laying wire in a coil and in transferring the coil onto a wire receiving reel, a winding member journaled for rotation about a horizontal axis, power means for rotatably driving said winding member, guide means mounted on said winding member and extending from one side thereof to the other and guiding the wire from one side of said winding drum and laying the wire in the form of a coil on the other side thereof, a coiling block extending from said winding member in axial alignment therewith and rotatably mounted at the other side of said winding member for free movement about the axis of rotation of said winding member, coil transferring means extending from said coiling block including a plurality of guiding members extending longitudinally from said coiling block and secured to said coiling block in spaced relation with respect to each other and uniformly curving with respect to said coiling block toward the ground, and an open spider secured to the lower ends of said guiding members and facing the ground in position to register with and extend over the upper end of a wire receiving reel and to discharge the coiled wire from said coil transferring means onto said reel by gravity, and said reel being movable from beneath said coil transferring means without stopping the reeling operation, by engaging said coil transferring means and pivotally moving said coil transferring means about said transverse axis by movement of said reel with respect to said coil transferring means.

6. In an apparatus for continuously laying wire in a coil and transferring the coiled wire onto a wire receiving reel, a winding member journaled for rotation about a horizontal axis, power means for rotatably driving said winding member, guide means mounted on said winding member and extending from one side thereof to the other, to guide the wire from one side of said winding member to the other and lay the wire in a coil on the other side of said winding member, an axially disposed coiling block extending from said winding member and underlying said guide means and rotatably mounted for movement about the axis of rotation of said winding member, coil transferring means extending from said coiling block and including a plurality of

guiding members secured to said coiling block in spaced relation with respect to each other and extending longitudinally from said coiling block and uniformly curving with respect thereto toward the ground and positioned by gravity to register with and extend over the upper end of a wire receiving reel, to discharge the coiled wire from said winding block onto said reel by gravity, said reel being removable from beneath said coil transferring means without stopping the reeling operation by pivotally moving said coiling block and coil transferring means about the axis of rotation thereabout by engagement of said reel with said coil transferring means upon slidable movement of said coil transferring means transversely of the axis of rotation of said reel, and a stop mounted on one of said guide members for pivotal movement with respect thereto and manually movable into position to be abutted by and to hold the coil in position on said block and into position out of the way of said coil, to accommodate the coiled wire to pass thereby and along said coil transferring means onto said reel, said stop being held in position on said respective guide member by frictional engagement therewith and being slidably movable therealong as the coiled wire builds up thereagainst.

7. An apparatus for continuously laying wire in a coil comprising a main frame, a winding member journaled on said main frame for rotatable movement about a horizontal axis, said winding member having an entering end on one side thereof to which the wire to be coiled is trained and a discharge end on the other side thereof, a motor on said main frame for rotatably driving said winding member, a coiling block extending from said winding member in axial alignment therewith, guide means on said one side of said winding member and training the wire to be coiled to said one side of said winding member, other guide means mounted on the periphery of said winding member and extending from one side thereof to the other to lay the wire on said coiling block in the form of a coil upon rotation of said winding member, and coil transferring means extending from and forming a continuation of said coiling block and having a discharge end portion directed toward the ground and comprising an open framework slidably guiding and discharging the coiled wire from said coiling block to the ground by gravity.

8. An apparatus for continuously laying wire in a coil comprising a main frame, a winding member journaled thereon for rotation about a horizontal axis, a motor on said main frame for driving said winding member, a coiling block in axial alignment with said winding member and extending from one side thereof and mounted for free rotatable movement with respect to said winding member, guide means including a plurality of guide sheaves training the wire to be coiled to the side of said winding member opposite side coiling block, other guide means including a guide sheave mounted on said winding member for rotation therewith and extending from one side of said winding member to the other to train the wire outwardly along said winding member along one side thereof and over the top thereof in overlying relation with respect to said coiling block and lay the wire thereon in the form of a coil upon rotatable movement of said winding member, and coil transferring means extending from said coiling block toward the ground and comprising an open framework secured to said coiling block and forming a con-

tinuation thereof and terminating into a vertically extending discharge end portion opening toward the ground for guiding and discharging the coiled wire from said coiling block to the ground by gravity.

9. An apparatus for continuously laying wire in a coil and transferring it onto a wire receiving reel, comprising a main frame, a winding member journaled on said main frame for rotation about a horizontal axis, a motor on said main frame for driving said winding member, a coiling block extending from one side of said winding member in axial alignment therewith and journaled for free rotation with respect thereto about the axis thereof, a guide sheave positioned to train the wire to be coiled to the side of said winding member opposite said coiling block, another guide sheave mounted on said winding member for rotation therewith and extending from one side of said winding member to the other to train the wire outwardly along said winding member and over the top thereof into an overlying position with respect to said coiling block and for laying the wire thereon in the form of a coil upon rotation of said winding member, and coil transferring means forming a continuation of and extending from said coiling block toward the ground and comprising an open framework secured to said coiling block at one of its ends and extending therefrom and having a vertically extending discharge end portion opening toward the ground and positioned by gravity to extend over a wire receiving reel resting on the ground, and to discharge the coiled wire from said coiling block onto said reel by gravity, and said reel being removable from beneath said coil transferring means without stopping the reeling operation by pivotally moving said coiling block and coil transferring means about the axis of rotation thereof effected by engagement of said reel with said coil transferring means during movement of said reel with respect to said coil transferring means.

10. In an apparatus for coiling wire, a frame, a hollow horizontal shaft journaled thereon, means for rotatably driving said shaft, a winding member on said shaft adjacent one end thereof and rotatably driven thereby, guide means for guiding the wire through said shaft from one end thereof toward said winding member, other guide means for guiding the wire outwardly from said shaft and outwardly along and over said winding member to the opposite side thereof from said first guide means, and an axially disposed coiling block extending from the side of said winding member opposite from said first guide means and mounted for free rotatable movement with respect thereto about the axis of said winding member, said coiling block being aligned with said other guide means to have the wire laid thereon by rotatable movement of said winding member, and a plurality of guide stakes secured to and forming a continuation of said coiling block and extending from said coiling block at an angle with respect thereto and having a vertically disposed discharge end portion opening toward the ground and held in such a position by gravity, to guide and discharge the coiled wire from said coiling block beyond the ends of said stakes by gravity.

11. A wire laying apparatus of the class described including a hollow horizontal shaft, means for rotatably driving said shaft, a winding member mounted on said shaft adjacent one end thereof for rotation therewith, a plurality of guide sheaves for guiding the wire through said shaft and laterally therefrom to one side of said winding member, another guide sheave mounted on said winding member for rotation therewith and guiding the wire along one side of said winding drum and acros sthe periphery thereof to the other side of said winding member, an axially disposed coiling block in axial alignment extending from said winding member and journaled for rotation about an axis coaxial with the axis of said winding member and underlying said other guide sheave in position to have the wire laid thereon upon rotation of said winding member, and guide stakes secured to and forming a continuation of said coiling block and leading from said coiling block toward the ground and having an open spider on the ends thereof opposite said coiling block opening toward the ground, and said spider and guide stakes receiving the coiled wire from said coiling block and guiding and discharging the coiled wire beyond said spider to the ground by gravity

12. A wire-laying apparatus of the class described including a hollow horizontal shaft, means for rotatably driving said shaft, a winding member mounted on said shaft adjacent one end thereof for rotation therewith, a plurality of guide sheaves positioned to guide the wire through said shaft to said winding member and radially therealong, another guide sheave journaled on said winding member for rotation therewith and extending from one side of said winding member to the other for guiding the wire along said winding member and across the periphery thereof, an axially disposed coiling block extending from the other side of said winding member and journaled for rotation about an axis coaxial with the axis of rotation of said winding member, a plurality of spaced guide stakes secured to and leading from said coiling block and having an open spider on the ends thereof opposite said coiling block opening toward the ground, and a stop mounted on one of said guide stakes for slidable movement therealong and controlled by frictional resistance between said stop and the associated stake by engagement by a predetermined amount of wire on said block, said stop being manually movable about the associated guide stake into position to be engaged by the wire on said block, and also being movable into position to accommodate the wire to freely pass thereby for discharge to the ground by gravity.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
412,564	Tallman	Oct. 8, 1889
1,007,039	McCullough	Oct. 24, 1911
2,149,851	MacLeod	Mar. 7, 1939
2,174,376	Bolton et al.	Sept. 26, 1939
2,216,224	Bruestle	Oct. 1, 1940
2,357,065	Zaica	Aug. 29, 1944