

Dec. 8, 1931.

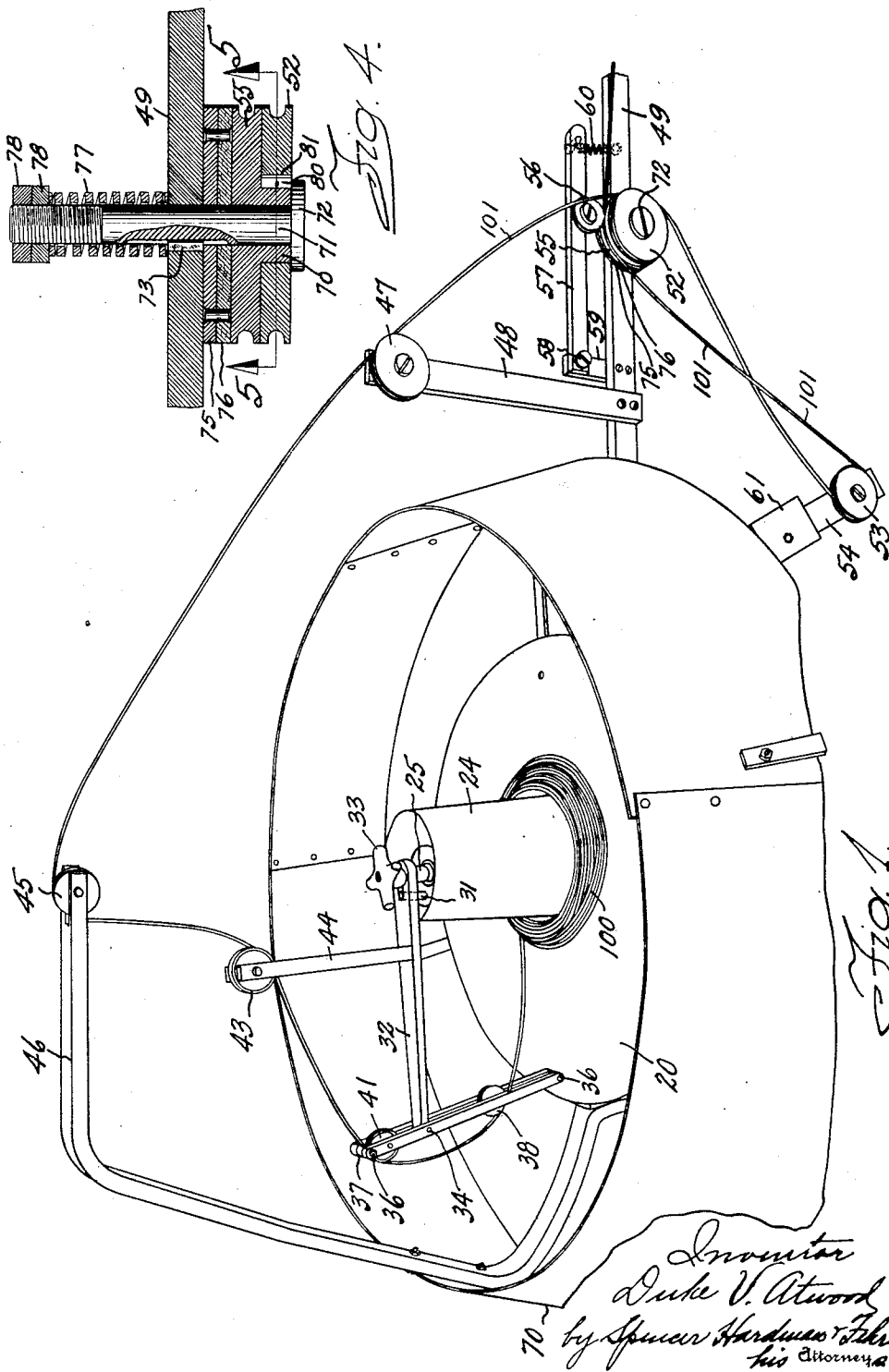
D. V. ATWOOD

1,834,993

WIRE UNREELING APPARATUS

Filed Dec. 2, 1929

2 Sheets-Sheet 1



Dec. 8, 1931.

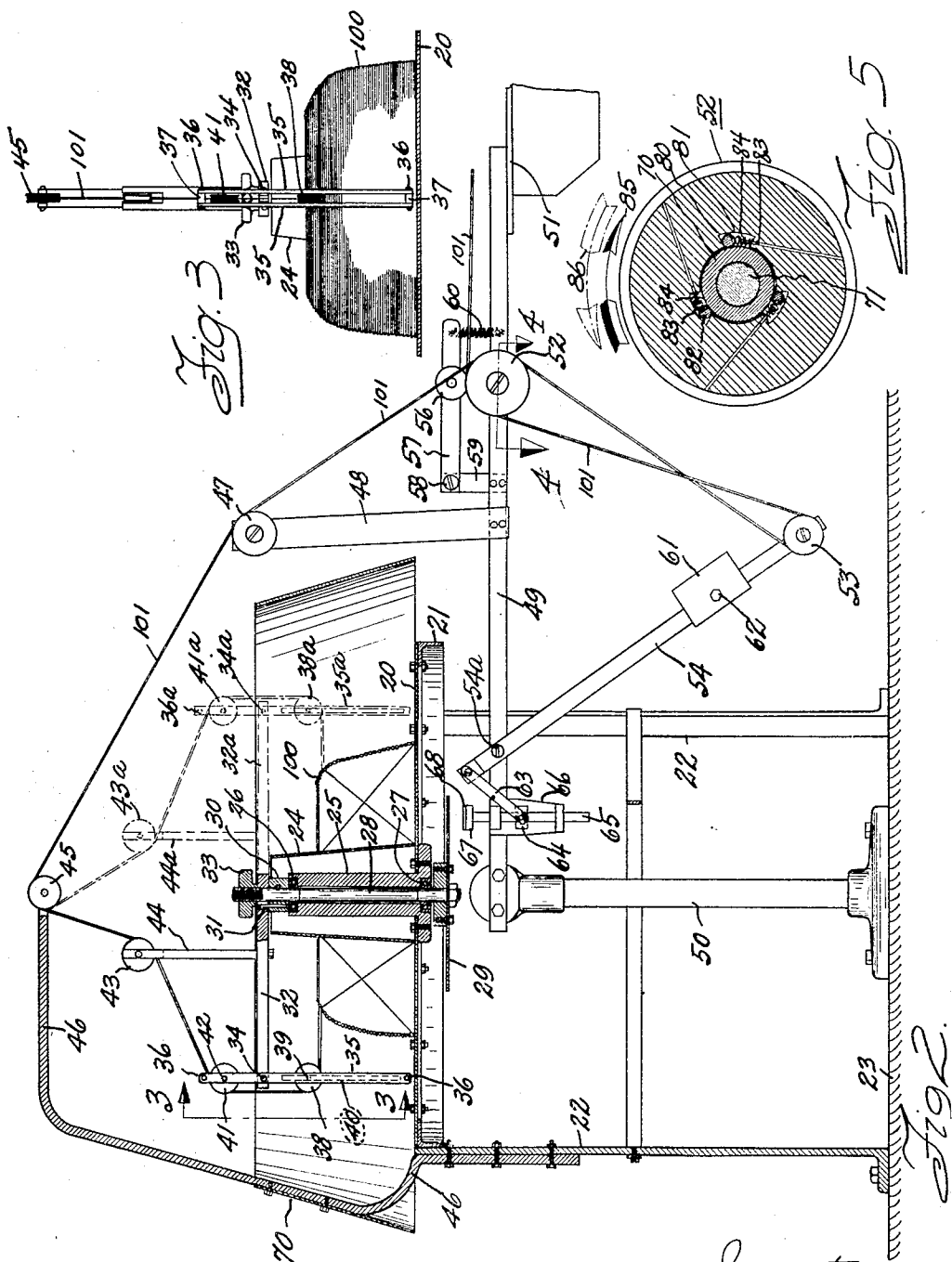
D. V. ATWOOD

1,834,993

WIRE UNREELING APPARATUS

Filed Dec. 2, 1929

2 Sheets-Sheet 2



Inventor
Duke V. Atwood
Spencer Hardman & Fitch
his Attorneys

UNITED STATES PATENT OFFICE

DUKE VANCE ATWOOD, OF ANDERSON, INDIANA, ASSIGNOR TO DELCO-REMY CORPORATION, OF ANDERSON, INDIANA, A CORPORATION OF DELAWARE

WIRE UNREELING APPARATUS

Application filed December 2, 1929. Serial No. 411,056.

This invention relates to apparatus for unreeling a coil of wire and for taking up the slack in the wire as it is being fed to another apparatus, for example, a device for automatically cutting off measured lengths of wire.

It is one of the objects of the present invention to provide a durable and reliable apparatus especially adapted for unreeling a coil of wire and for taking up the slack between the coil and the apparatus to which the wire is fed.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings wherein a preferred embodiment of one form of the present invention is clearly shown.

In the drawings:

Fig. 1 is a fragmentary perspective of apparatus embodying the present invention.

Fig. 2 is a side elevation partly in section.

Fig. 3 is a view on the line looking in the direction of the arrows of Fig. 2.

Fig. 4 is a fragmentary sectional view on a larger scale on line 4-4 of Fig. 2.

Fig. 5 is a sectional view on line 5-5 of Fig. 4.

The unreeling apparatus comprises a circular table 20 having its edge reinforced by a circular angle bar 21 attached to legs 22 resting upon the floor 23. The table 20 carries a frusto-conical tubular member 24 around which a coil of wire 100 may be placed when the coil rests upon the table 20. The member 24 or locator locates the coil centrally of the table 20 and encloses a central member 25 containing ball bearings 26 and 27 for a shaft 28 carrying at its lower end a brake disc 29 and at its upper end a sleeve 30 from which extends a driving pin 31. The pin 31 engages a suitable recess in an arm 32 which is clamped against the sleeve 30 by a nut 33 threadedly engaging the upper end of the shaft 28. The arm 32 provides a pivot 34 for a pair of swinging bars 35 which are spaced apart as shown in Fig. 3 and are united by pins 36 extending through spacers 37 located at both ends of the bars. A floating grooved wheel 38 providing a wire guide

is vertically movable between the bars 35 and rotates upon a pin 39 each end of which is received by a groove 40 provided on the inner side of each bar 35. In this way the wheel 38 while rotating is permitted to move up and down along the bars 35. The wire 101 leading from the coil 100 is passed around the wheel 38, then around a grooved wheel 41 rotatable with pin 42 journaled in the bars 35, around a grooved wheel 43 rotatably supported by a post 44 attached to the arm 32, around a grooved wheel 45 pivotally supported by a bracket 46 attached to one of the legs 22, around a grooved wheel 47 pivotally supported by post 48 supported by horizontal bar 49 having one end attached adjacent the upper end of a pedestal 50 and the other end resting upon a shelf 51 which may be a part of the machine to which the wire is fed.

After leaving wheel 47, the wire 101 passes around a grooved wheel 52 pivotally supported by the bar 49, then around a grooved wheel 53 pivotally supported by a bar 54 pivoted at 54a upon the bar 49. After passing the wheel 53 the wire 101 passes again around a wheel 55, coaxial with wheel 52 and then horizontally toward a machine which consumes the wire. This last portion of the wire is yieldingly pressed against the wheel 55 by a small wheel 56 which is pivotally supported by a bar 57 pivoted at 58 upon a post 59 carried by the bar 49. The bar 57 is yieldingly urged toward the bar 49 by a spring 60 which connects them.

The bar 54 carries a weight 61 which is slidable along the bar and is secured thereto in any desired position by screw 62. The upper end of the bar 54 is pivotally connected with a link 63 the lower end of which is pivotally connected with a collar 64 attached to a rod 65 which is supported by and which is guided for vertical movement by a bracket 66 attached to the bar 49. The upper end of the rod 65 carries a disc 67 having a face disc 68 of anti-friction material adapted to engage the brake disc 29.

As the wire 101 is pulled from the wheel 52 in a horizontal direction by the machine which the wire supplies, it is obvious that the arm 32 will be rotated in a clockwise direc-

tion as viewed in Fig. 1. Another position of the arm 32 and part supported thereby is represented in dot-and-dash lines in Fig. 2, the parts being referred to by numerals 32a, 34a, 35a, 36a, 38a, 41a, etc. Workmen are protected from the moving parts including the arm 32 and parts supported thereby by a frusto-conical sheet metal guard 70.

As long as the wire 101 remains taut the arm 32 is free to rotate, but should the wire become slack to a certain degree between the reel of wire 100 and the wheel 55 the arm 54 will move clockwise to cause the rod 65 to move upwardly thereby causing the brake member 68 to engage the brake disc 29. Thereupon, rotation of the arm 32 will be resisted so that the slack in the wire 101 will be taken up. When the wire becomes taut again, the bar 54 will be lifted in order to retract the brake member 68 from the brake 29 so that the arm 32 may rotate freely. As shown in Fig. 4, guide wheel 52 is journaled on the hub 70 of guide wheel 55 which is journaled on a rod 71 having a head 72 bearing against hub 70 and confining wheel 52. Rod is slidable through bar 49 and is feather-keyed thereto at 73 so that it cannot turn with the guide wheels. To bar 49 is attached a brake plate 75 carrying a face disc 76 of leather or other suitable friction material. Braking pressure is applied between the disc 76 and the wheel 55 by a spring 77 located between the bar 49 and nuts 78 threaded engaging the rod 71. By adjusting the nuts 78 the braking pressure may be varied.

As shown in Fig. 5, the wheel 52 is provided with notches 80 having bounding surfaces 81 non-concentric with the periphery of hub 70. Each notch 80 receives a roller 82 normally urged by a plunger 83 pressed by a spring 84 toward the wider portion of the notch. In this way a one-way clutch connection is provided between the wheel 52 and the hub 70 of wheel 55. Therefore wheel 52 may rotate freely in the direction of arrow 85 but will clutch itself automatically to hub 70 of wheel 55 when there is a tendency to rotate the wheel 52 in the direction of arrow 86. Thus counterclockwise rotation of wheel 52 will be at least frictionally resisted due to the brake which resists rotation of wheel 55; and, if wheel 55 tends to rotate clockwise when wheel 52 tends to rotate counterclockwise, one wheel will oppose the other and neither wheel may rotate.

In case of tangling the wire between the reel and pulley 52 and 55 causing a jerk on the wire, the wheel 52 will tend to turn counterclockwise thereby resisting movement of wheel 55 clockwise, or in a direction to feed wire into the machine which consumes the wire. In this way the strain resulting from the jerk is taken up at the wheel 52 and 55 and is prevented from being transmitted by the wire to the machine which consumes it.

The braking device tends to reduce overtravel of the wheels 52 and 55 due to the jerking of the wire by the machine.

The guide wheel 38 moves up and down in order to accommodate itself to the turn of wire then being unwound from the coil 100.

When the wire has all been consumed the nut 33 is removed from the upper end of the shaft 28 in order that the arm 32 and parts supported thereby may be moved out of operating position so that a new coil of wire may be placed upon the table 20 and around the locator 24. Then the bar 32 is placed upon the collar 30 and secured thereto by the nut 33; and the wire is threaded around the grooved guide wheels and the unreeling device operates as before.

The present apparatus is particularly adapted for unreeling wire fed to a machine such as an automatic cutter which pulls or jerks on the wire intermittently. Regardless of the fact that the arm 32 will overtravel during each intermittent movement of jerking of the wire the bar 54 will descend into braking position before the next jerk of the wire takes place in order to cause the rotation of the arm 32 to be resisted by the braking action of the parts 29 and 68. Thus the slackness of the wire is taken up during the first part of the next succeeding intermittent movement of the wire from the wheel 55. Although the wire between the reel 100 and the wheel 55 may vary in degree of tautness, the wire between the wheel 55 and the machine which consumes the wire will be substantially taut at all times.

While the form of embodiment of the present invention as herein disclosed, constitutes a preferred form, it is to be understood that other forms might be adopted, all coming within the scope of the claims which follow.

What is claimed is as follows:

1. Apparatus for unreeling wire comprising in combination, a horizontal support for receiving a coil of wire, a vertical shaft extending through the coil, an unreeling arm attached to the upper end of the shaft, wire guiding devices carried by said arm, a wire guiding device located vertically above said shaft, a pair of wheels between which the wire is gripped before passing to the machine which consumes the wire, a movable wire guide around which the wire passes before passing to the pair of wheels, and means operated by said movable wire guide for frictionally resisting rotation of said shaft when the slackness of the wire exceeds a certain amount.

2. Apparatus for unreeling wire comprising in combination, a horizontal support for receiving a coil of wire, a vertical shaft extending through the coil, an unreeling arm attached to the upper end of the shaft, wire guiding devices carried by said arm, a wire guiding device located vertically above said

shaft, a pair of wheels between which the wire is gripped before passing to the machine which consumes the wire, a movable wire guide around which the wire passes before passing to the pair of wheels, and co-
operating brake members one attached to said shaft and the other actuated by the movable wire guide toward and away from the brake member attached to the shaft in order to resist frictionally the rotation of the shaft when the slackness of the wire exceeds a certain amount.

3. Apparatus for unreeling wire comprising in combination, a horizontal supporting table for receiving a coil of wire, a tubular member extending centrally through the coil and attached to the table, a shaft bearing supported by the table centrally of the tubular member, a vertical shaft supported by the bearing, a horizontal arm attached to the upper end of the shaft, a brake disc attached to the lower end of the shaft below the table, wire guiding devices carried by the arm, a wire guiding device located vertically above the shaft, and means for applying a braking pressure to the brake disc when the slack in the wire exceeds a certain amount.

4. Apparatus for unreeling wire comprising in combination, a horizontal support for receiving a coil of wire, a horizontal arm rotatable about a vertical axis located centrally with respect to the coil, a support pivotally connected with the arm and extending transversely thereof, a plurality of wire guiding devices carried by said pivoted support one of the said devices being bodily movable along said support, a wire guiding device located vertically above the axis of the arm, and means for resisting rotation of the arm when the slackness of the wire exceeds a certain amount.

5. Apparatus for unreeling wire comprising in combination, a horizontal support for receiving a coil of wire, a vertical shaft extending through the coil, an unreeling arm attached to the upper end of the shaft, a brake disc attached to the lower end of the shaft, wire guiding devices carried by said arm, a wire guiding device located vertically above said shaft, and means for frictionally resisting rotation of the shaft, said means comprising a brake member vertically movable into and out of engagement with said brake disc, a vertically movable rod supporting said member, a pivoted weighted lever operatively connected with said rod and carrying a wire guiding device around which a loop of wire is passed whereby when the slackness of the wire exceeds a certain amount the weighted lever will move downwardly in order to move the brake member upwardly into contact with the brake disc.

In testimony whereof I hereto affix my signature.

DUKE VANCE ATWOOD.