

July 26, 1960

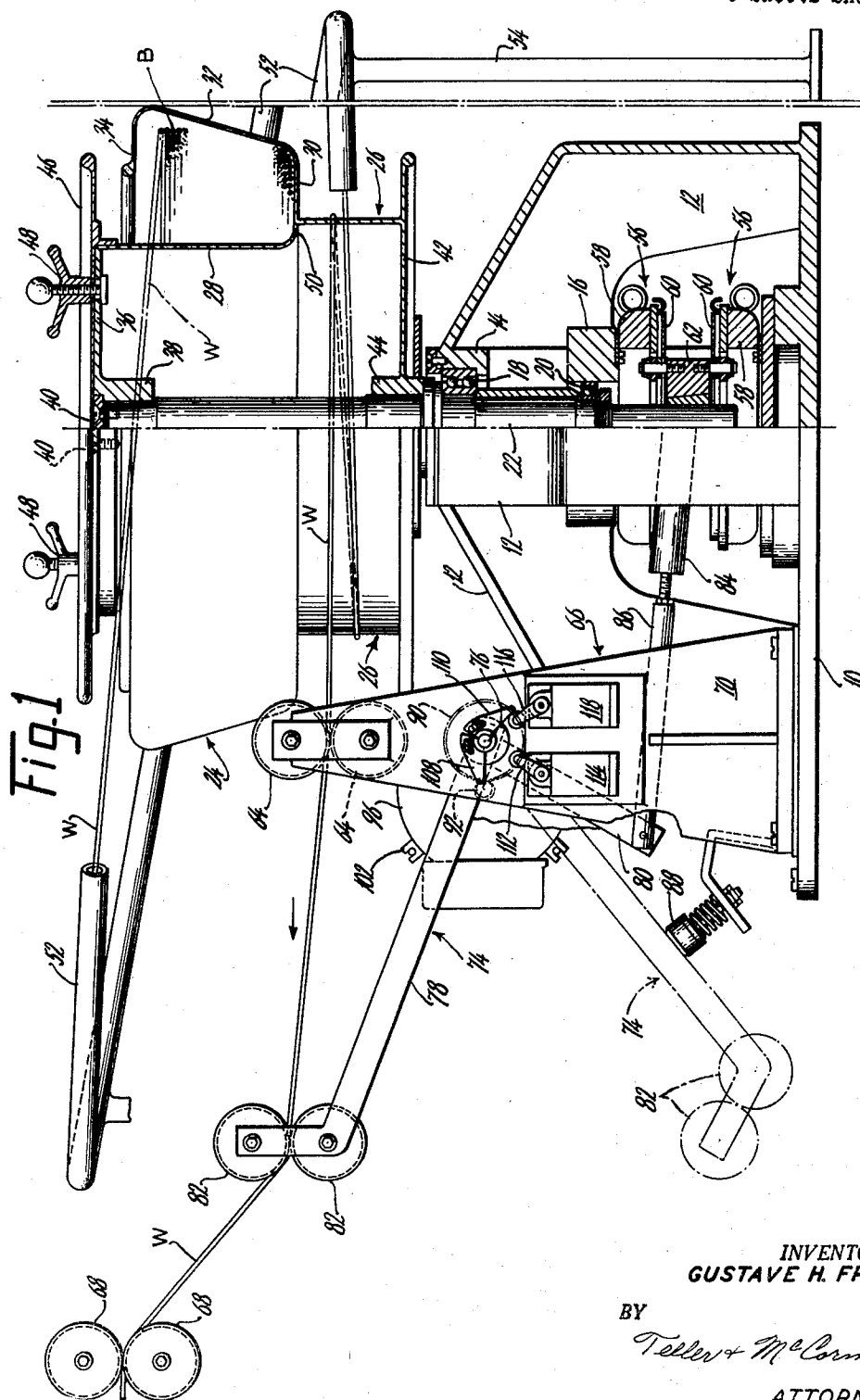
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2,946,536

PAY OFF REEL FOR WIRE OR THE LIKE

Filed Dec. 6, 1956

3 Sheets-Sheet 1



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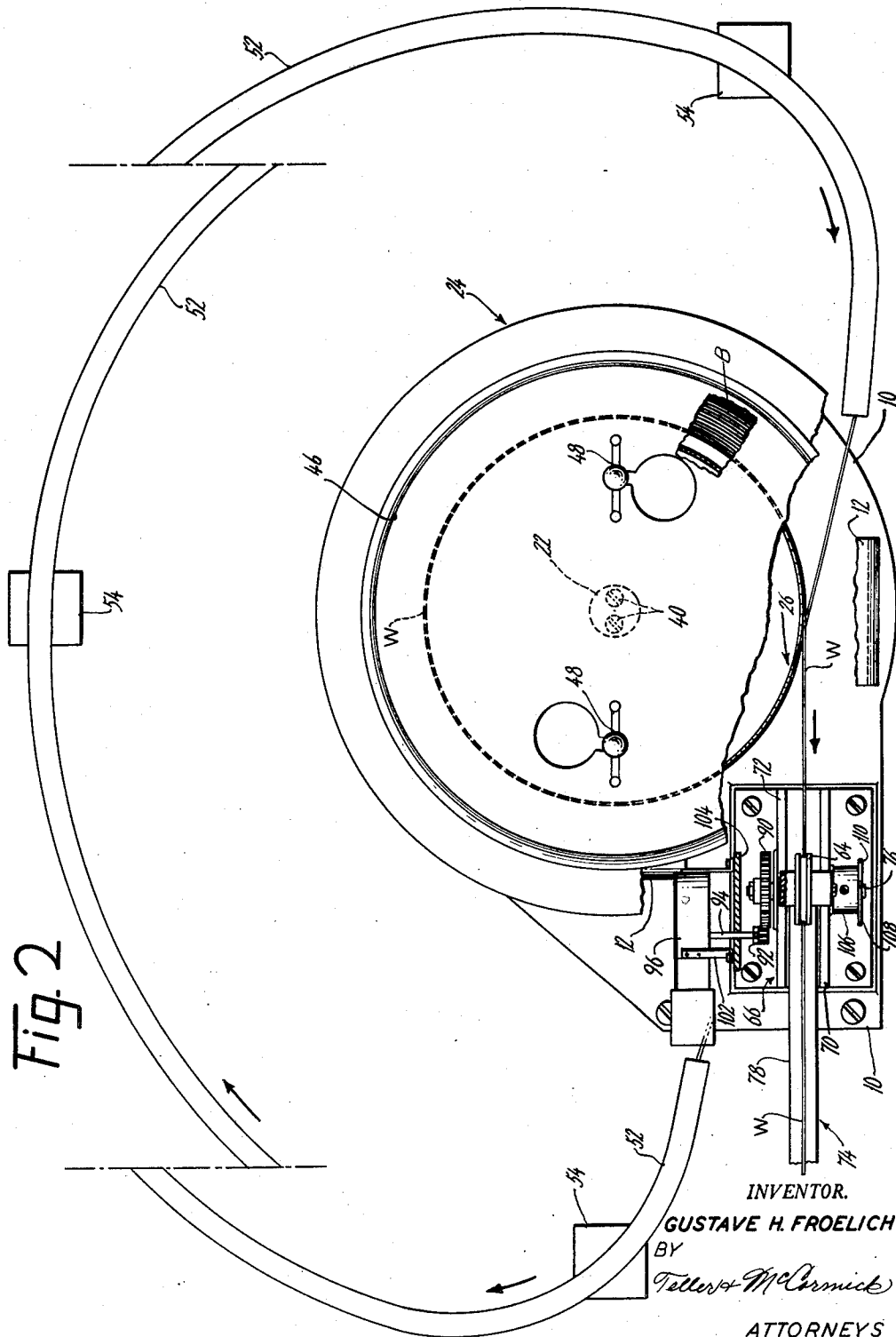
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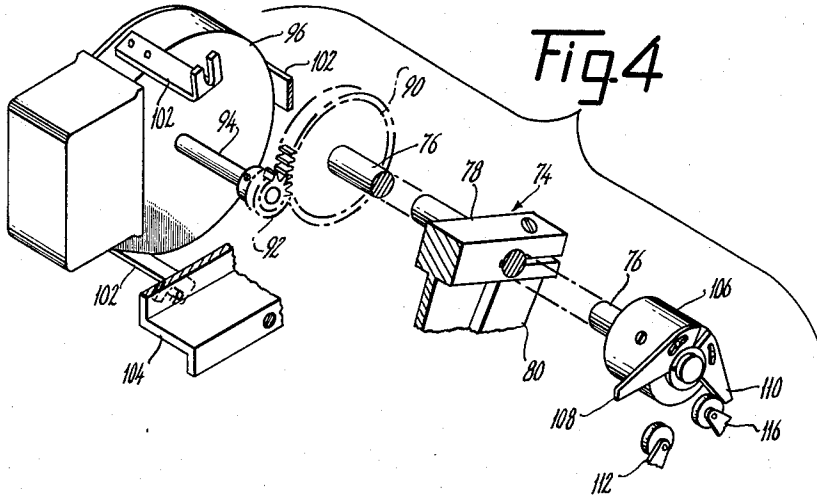


Fig. 3

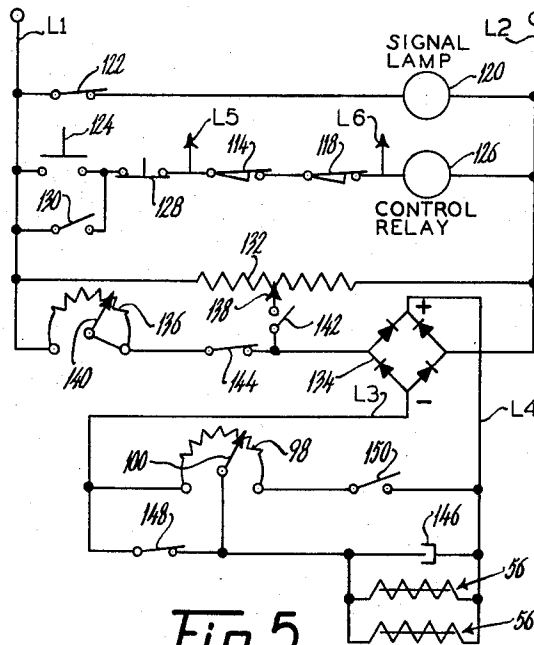
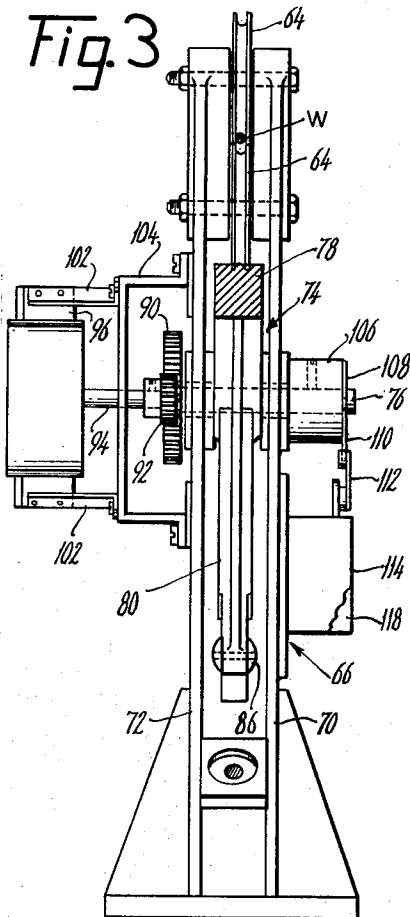


Fig. 5

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PAY OFF REEL FOR WIRE OR THE LIKE

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This invention relates to a pay off reel for wire or the like and, more specifically, to an idle pay off reel which is rotated by the mill or other device using the wire and pulling it from the reel.

It is the general object of the invention to provide a pay off reel of the aforementioned type which is adapted to support a coiled bundle of wire or the like and to pay off the wire freely so as to minimize tangling or snagging of the convolutions in the bundle and which incorporate means for applying regulated tension to the wire being payed off and which also includes means for stopping operation of the mill or other device using the wire and for braking the reel in the event the wire breaks or becomes tangled or the mill or other device is stopped suddenly and ceases to pull wire from the reel.

The drawings show a preferred embodiment of the invention and such embodiment will be described, but it will be understood that various changes may be made from the construction disclosed, and that the drawings and description are not to be construed as defining or limiting the scope of the invention, the claims forming a part of this specification being relied upon for that purpose.

Of the drawings,

Fig. 1 is an elevational view partly in vertical section of the pay off reel;

Fig. 2 is a plan view of the reel with parts shown in horizontal section to illustrate details;

Fig. 3 is a side view of the bracket supporting a pivoted arm and a potentiometer, all forming a part of the means for controlling brake force and wire tension;

Fig. 4 is a perspective view showing the aforesaid elements of the tension control means in exploded relationship, and

Fig. 5 is a wiring diagram showing the electrical arrangement of the tension control means and brake mechanism employed in the reel.

As shown in Fig. 1 of the drawings, the presently preferred embodiment of a pay off reel constructed in accordance with the present invention includes a frame which comprises a base 10 and a plurality of spaced apart legs 12, 12 which extend upwardly and inwardly from the base. The said base and legs are preferably formed integrally as a single casting which also includes a pair of axially spaced apart vertical sleeves 14 and 16, the said sleeves being provided to support anti-friction bearing units 18 and 20 surrounding a rotatable vertical shaft 22. The said vertical shaft projects upwardly from the base 10 and the legs 12, 12 and the upwardly projecting portion of the shaft supports a unitary reel structure which includes an annular coil basket 24 and a snubbing or capstan drum 26. Thus, it will be observed that the reel per se comprises means rotatably mounted on a base and adapted to support a coiled bundle of wire or the like. As previously mentioned, the reel is of the non-driven type, which means that it is rotated only when wire is pulled from the bundle which it supports. As will be more fully described hereinafter, elec-

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trically operable brake structure is mounted on the base 10 and operatively associated with the shaft 22 to retard rotation thereof whereby to apply a selected or regulated tension to wire being pulled from the reel.

The reel per se comprising the coil basket 24 and the capstan drum 26 has a generally cylindrical wall 28 which provides the inner wall of the annular coil basket 24 and the cylindrical wall of the capstan drum 26 below the coil basket. In addition to the inner wall 28, the coil basket has a radially extending bottom wall 30, a generally vertically extending outer wall 32 and a top wall or flange 34 which is formed integrally with the said outer wall and projects radially inwardly therefrom but in spaced relationship to the said inner wall. The top of the generally cylindrical wall 28 of the reel is closed by a wall 36 which has a centrally located boss 38 provided with a suitable recess to receive the projecting top end of the rotatable shaft 22. A pair of screws 40, 40 extend from the boss 38 into the end of the shaft 22 whereby to secure the reel to the shaft for rotation therewith. The bottom end of the cylindrical wall 28 or the bottom end of the capstan drum is also closed by a plate or wall 42 having a portion which extends radially outwardly from the wall 28 and having a centrally located boss 44 which is provided with a bore to receive the shaft 22.

The wire is loaded in the coil basket 24 in a coiled bundle B which is inserted through the annular opening between the inner wall 28 of the basket and the top flange 34. After the bundle is placed in the basket, a cover 46 is detachably secured to the top wall 36 of the reel by any suitable means such as the fastening devices 48, 48. It should be observed that the cover 46 extends radially outwardly over the annular opening at the top of the basket 24 and is spaced above the top flange 34 of the said basket. Preferably, the trailing or bottom end of the wire W in the bundle B is projected through an opening 50 in the bottom wall of the coil basket whereby to secure the bundle against undesirable rotation within the basket. While but one opening 50 is shown in the drawings, a plurality of circumaxially spaced similar openings are provided selectively to receive the bottom or trailing end of the wire.

The wire W is payed out of the coil basket from the top convolution in the bundle B over the top flange 34 of the basket and under the extending peripheral portion of the reel cover 46. As the wire leaves the reel, it is guided through a generally helical tube 52 which is independently supported on posts 54, 54 and which surrounds the reel in spaced relationship. The guide tube 52 is so arranged that the wire in passing from one end of the tube to the other end thereof will make approximately a 360° turn or convolution, the top or receiving end of the tube being located adjacent the top of the basket 24, and the bottom or discharge end of the tube being located adjacent the capstan drum 26.

Obviously, the independently supported guide tube 52 can be placed in selected positions around the reel to guide the wire onto the capstan drum 26 from any selected rotated position. The tube is preferably located so that the wire will make approximately one complete convolution on the drum before being pulled off in the direction of the mill or other device. The provision of the capstan drum in the reel construction is an important feature, because it is the drum arrangement that permits the wire to be payed off freely from the bundle in the coil basket. That is, the tension applied to the wire in pulling it to the mill or other device is taken up on the capstan drum. This means that there is no substantial pulling force on the wire between the drum and the coil basket. By eliminating substantial pulling forces on the convolutions of wire in the coil, the likelihood of tangling or binding

the convolutions is very much diminished. However, this does not mean that heavy tension cannot be imposed on the wire between the mill and the drum, because the said drum will take up relatively great tension without causing any substantial force to be applied on the wire in the bundle.

As previously mentioned, wire tension is controlled in accordance with the present invention by electrically operable brake means disposed in the base 10 and operatively associated with the shaft 22. The said brake means comprises a pair of similar brakes 56, 56 which are arranged in vertical tandem and facing each other. Each brake has an annular stator 58 surrounding the shaft 22, the upper stator being fixedly supported on the lowermost frame sleeve 16 and the lower stator being secured to the base 10. Each brake also has a rotor or armature 60 surrounding the shaft in spaced relationship, the armatures being arranged to face each other and being secured to a common ring or sleeve 62 which is keyed to the shaft. A wide variation in the details of construction of the brakes 56, 56 is permitted, but the construction is preferably such that the stators 58, 58 are connected in parallel in a power network and have coils which impose fields of magnetic influence across the respective rotors or armatures 60, 60. Thus, by respectively increasing and decreasing the coil energy, the attraction between the stators and armatures is increased and decreased and the braking force is increased and decreased. As will be described more fully hereinafter with reference to the wiring diagram of Fig. 5, the network arrangement is such that a selected braking force is applied to prevent reel rotation when the mill or other device is not in operation or when the wire becomes tangled or breaks, and at all other times a varying brake force is applied to retard reel rotation whereby to maintain substantially constant wire tension. The means for establishing a selected braking force comprises a manually adjustable resistance and the means for controlling the retarding force comprises two additional resistances, one of which is manually adjustable and the other of which is automatically varied responsive to change in the tension on the wire. As will now be described, changes in wire tension are reflected in changes in the path of the wire as it is drawn from the capstan drum and between two horizontally spaced apart fixedly located guide means.

The first of the said guide means comprises a pair of guide rolls 64, 64 which are rotatably supported on a bracket 66 secured to the base 10 and forming a part of the frame structure. The guide rolls 64, 64 are rotatable on horizontal axes and in substantially the same vertical plane but they are spaced apart so that the wire W will either be guided on one roll or on the other roll without any substantial vertical shifting. That is, the rolls 64, 64 are supported on the bracket 66 adjacent the capstan drum 26 to receive the wire W between the rolls. If the wire is pulled slightly upwardly and toward the left as viewed in Fig. 1, it will be guided upon and rotate the upper roll 64, but if the wire is pulled slightly downwardly and to the left, it will be guided upon and rotate the lower guide roll 64.

The second guide means is similar to the first and comprises a pair of vertically spaced guide rolls 68, 68 which rotate in substantially the same vertical plane as the first mentioned guide rolls 64, 64. The guide rolls 68, 68 are preferably fixedly located and they may be supported on the wire mill or other wire-using device or they may be supported on any other frame means not shown. The wire W extends from the first guide means comprising the rolls 64, 64 to the second guide means comprising the rolls 68, 68 and the direction of wire movement is from the first guide means to the second.

The bracket 66 supporting the guide rolls 64, 64 has a front vertical plate 70 and a rear vertical plate 72, the said guide rolls being disposed between the plates ad-

jacent their upper ends. The bracket 66 also pivotally supports an arm 74 between its front and rear plates, the arm being secured to a shaft 76 which extends forwardly and rearwardly respectively of the said front and rear plates. The said arm 74 is generally L-shaped and is pivoted at the intersection of its legs, there being one relatively long leg 78 which extends from the bracket generally in the direction of travel of the wire W and there being a relatively short leg 80 which extends generally downwardly. The extending end portion of the longer leg 78 is bifurcated and rotatably supports a pair of rolls 82, 82 which are similar to the previously mentioned guide rolls. The said bifurcated end portion of the arm 74 is bent upwardly so that one of the rolls 82, 82 will be disposed over the other in any pivoted position of the arm relative to the bracket 66. It will be observed that the rolls 82, 82 on the end of the arm 74 are disposed between the first mentioned pair of fixedly located guide rolls 64, 64 and the second mentioned fixedly located pair of guide rolls 68, 68. The wire W extends between the rolls 82, 82 on the pivoted arm whereby it can be said that the extending or free end of the arm is supported in suspension by the wire W.

Obviously, the path which the wire follows in travel from the first fixedly located guide means to the second fixedly located guide means is influenced by the weight of the arm 74 on the wire and the path is also influenced by the tension on the wire. That is, if there is relatively little tension on the wire as it is being pulled from the first guide means to the second guide means, the weight of the arm will cause the wire to sag between the guide means. If the tension is relatively heavy, the weight of the arm 74 will have less effect and the wire will not sag as much. This also means that with an increase in tension on the wire, the extending end of the pivoted arm 74 will be elevated, and with a decrease in tension on the wire, the extending end of the arm will drop. Thus, it can be said that the arm 74 is pivoted or rotated responsive to change in wire tension, the arm being pivoted clockwise as viewed in Fig. 1 with an increase in tension and counterclockwise with a decrease in tension.

In operation of the pay off reel shown there is a clockwise limit and a counterclockwise limit on movement of the arm 74 beyond which limits the arm actuates control means to stop operation of the wire mill and the reel. The operating range for movement of the arm 74 is between the full line clockwise position shown and the broken line counterclockwise position. The effective weight or force of the arm 74 on the wire W can be adjusted to bring the arm within the operating range at a desired wire tension by means of an air cylinder 84. That is, the cylinder 84 is of the double acting type delivering pressure selectively to extend or to retract a piston and piston rod 86. The extending end of the piston rod is pivotally connected to the free end of the shorter leg 80 of the arm 74 and when it is extended under pressure it has the effect of decreasing the effective weight or force of the arm on the wire W. When the piston rod is retracted under pressure, it has the effect of increasing the force of the said arm on the wire. It should also be observed that the air cylinder provides a pneumatic shock absorber for the arm when the piston rod is extended under pressure by taking up the shock of the arm if it falls, as will occur if the wire breaks. When the piston rod is retracted under pressure, and if the wire breaks, shock of the falling arm is absorbed in a spring biased stop 88 which is suitably supported on the bracket 66.

During operation of the reel, pivotal movement of the arm 74 within the range defined is utilized to move an electrical conductor across a resistance, the conductor and the resistance being connected in the power network to the brake means, whereby to vary the electrical energy to the brake means. More specifically, the rear end portion of the shaft 76 which is rotated with the arm 74

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secures a gear 90 which engages a pinion 92 on the shaft 94 of a potentiometer 96. The potentiometer is of conventional construction and includes a resistance 98 and a conductor 100 (Fig. 5) which is secured to the shaft 94 for pivotal movement across the resistance when the shaft is rotated. The potentiometer housing or case is mounted on arms 102, 102 secured to a gear housing 104 which encloses the gear 90 and pinion 92 and which is secured to the rear wall 72 of the bracket 66.

Movement of the arm 74 beyond the defined range in either direction is utilized to shut off the wire mill or other device and to energize the brake means to stop rotation of the reel. More specifically, the forwardly projecting end portion of the shaft 76 mounts a block 106 to which a pair of limit switch trips 108 and 110 are adjustably secured. In rotation of the arm 74 in a counterclockwise direction beyond the operating range, as will occur if the wire W breaks, the shaft 76 will be rotated counterclockwise to bring the trip 108 into engagement with an actuating arm 112 for a limit switch 114 whereby to open the limit switch to de-energize the wire mill and to set the brake means as will be described. If the arm 74 is rotated clockwise beyond the operating range, as may occur if the wire W becomes tangled in the coil basket 24 and the wire tension exceeds a desirable limit, the shaft 76 will be rotated to bring the trip 110 into engagement with an actuating arm 116 for a limit switch 118 which is connected in series with the limit switch 114 and serves a similar purpose. It should be observed that the trips 108 and 110 can be secured in adjusted rotated positions on the block 106 whereby to engage the limit switch arms in selected rotated positions of the shaft 76 and arm 74. Thus, the location of the trips determines the operating range of pivotal movement of the arm 74. The operation of the limit switches and of the previously mentioned potentiometer 96 will be more fully understood from the following description of the wiring diagram shown in Fig. 5.

The power network for the brake means as shown in Fig. 5 includes a pair of main conductors L1 and L2 which are connectible to a suitable source of alternating current energy and which are the common conductors for a plurality of parallel circuits. As shown in the diagram, the uppermost of these circuits is a signal circuit which includes a lamp 120 and a normally closed, relay operated switch 122. The control relay which opens the switch 122 is energized only when the reel is to be rotated and at all other times the electrically operable brake means is set to prevent rotation of the reel. Therefore, the signal circuit and the signal lamp 120 are energized to indicate that the full brake force is applied and the reel cannot be rotated.

The next circuit to be considered includes a push button type start switch 124 which is biased to open position, the aforementioned control relay 126, a push button type stop switch 128 which is biased to closed position, and the series connected limit switches 114 and 118. The relay 126 operates all of the switches to be hereinafter designated including a normally open interlock switch 130 which shunts the start switch 124 whereby the start switch can be released after it is initially closed and the relay will remain energized until the stop switch 128 is opened or until either of the limit switches 114 and 118 is opened. In addition to opening the switch 122 in the signal circuit, the control relay when energized conditions the balance of the network to remove the full braking energy from the brake means and to energize the brake means to apply only a tension-controlling retarding force to the reel.

The next circuit in top-to-bottom order of the wiring diagram includes only the resistance 132. The resistance 132 is the heaviest in the network and at least a portion of this resistance is included in the brake circuit structure whenever the network is conditioned to have the brake means apply only a retarding force to the reel. The said brake circuit structure includes a full wave rectifier 134

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which is connected at one side to the conductor L2 and at the other side it is selectively connected to the conductor L1 through the heavy resistance 132 or through a relatively light resistance 136. The light resistance 136 is included in the brake circuit structure whenever the network is conditioned to apply the full braking force to the reel.

More specifically, the resistances 132 and 136 are included in separate manually adjustable potentiometers in a control panel (not shown) and the potentiometers include the movable conductors 138 and 140, respectively. The conductor 138 is connected to the said other side of the rectifier 134 and is manually adjustable along the resistance 132 to select a resistance which determines the energy to the brake means for applying a retarding force to the reel whereby to control wire tension. The conductor 140 is also connected to the said other side of the rectifier and is manually adjustable along the resistance 136 to select a resistance which determines the energy to the brake means for applying the force necessary to prevent rotation of the reel. A normally open switch 142 is disposed in the conductor 138 and is closed only when the relay 126 is energized whereby to place the heavy selected resistance 132 in circuit with the rectifier thereby minimizing the brake energy to apply only a retarding force. A normally closed switch 144 is disposed in the conductor 140 and is opened only when the relay 126 is energized, at all other times placing the light selected resistance 136 in circuit with the rectifier thereby increasing the brake energy to prevent reel rotation.

Two conductors L3 and L4 are connected to the rectifier 134 to provide direct current to the brakes 56, 56 which are connected in parallel relationship with each other and with a capacitance 146. The conductor L4 is directly connected to the brakes and the conductor L3 is normally directly connected thereto through a normally closed switch 148. However, when the control relay 126 is energized, a switch 150 is closed to energize the potentiometer 96 between the conductors L3 and L4 and the conductor L3 is connected to the brakes through the potentiometer resistance and conductor 98 and 100. Thus, when the start switch 124 is closed to energize the control relay 126, and thereby to close switch 142 while opening switches 144 and 148, the selected portion of the resistance 132 and a portion of the resistance 98 are included in the power network to the brakes 56, 56. This network condition of relatively high resistance is reflected in relatively little brake energy whereby the brakes merely retard rotation of the reel. However, the resistance is automatically adjusted during reel operation and the brake energy altered accordingly to vary the retarding force. That is, pivotal movement of arm 74 downwardly resulting from decreasing wire tension moves the conductor 100 counterclockwise (as viewed in Fig. 5) on the resistance 98 of the potentiometer 96 thus decreasing the resistance to increase brake energy and the retarding force to increase wire tension. If the arm 74 is pivoted upwardly by increasing tension, the conductor 100 moves clockwise on the resistance 98 to increase resistance and to reduce brake energy and force, thereby reducing wire tension. Therefore, it can be said that the power network includes control means for automatically regulating brake force to maintain substantially constant wire tension under normal operating conditions.

When normal operating conditions do not prevail, either the limit switch 114 or the limit switch 118 is automatically opened to de-energize the control relay 126. Whenever the relay is de-energized, the switches 130, 142 and 150 open automatically and the switches 122, 144 and 148 close automatically. Thus the power network is conditioned to connect only the relatively light resistance to the brakes for increased brake energy and full braking force. As previously mentioned, the limit switch 114 is opened by counterclockwise rotation of the arm 74 beyond the operating range as will occur if the wire breaks,

and the limit switch 118 is opened by clockwise rotation of the said arm beyond the range as will occur if the wire becomes seriously tangled in the coil basket. Preferably, conductors L5 and L6 for the power circuit to the wire mill are connected on opposite ends of the series connected limit switches 114 and 118 whereby opening of either of the said limit switches will stop operation of the mill as well as stop rotation of the reel. It will be obvious that when the relay is de-energized by opening of either of the limit switches or by opening of the stop switch 128, it cannot again be energized except by closing the start switch 124. The limit switches are preferably of the type that are biased to closed positions so that they do not have to be manually closed before energizing the control relay.

The over-all operation of the reel should be apparent from the foregoing description and can be summarized as follows:

The wire bundle B is placed in the coil basket 24 and the reel cover 46 is secured. The leading end of the wire W is then extended through the helical guide tube 52 and around the capstan drum 26. The wire is then extended through the guide rolls 64, 64, through the rolls 82, 82 on the end of the potentiometer actuating arm 74, and then through the guide rolls 68, 68 to the wire mill. This completes the wire set-up and attention is then devoted to the electrical control network many elements of which can be disposed in a panel (not shown).

The control panel adjustments comprise adjusting the manually operable potentiometers which include the resistances 132 and 136, the resistance 132 being set to control brake energy for retarding reel rotation and the resistance 136 being set to control brake energy for stopping reel rotation. With such adjustments completed, the start switch 124 can be depressed to condition the power circuit to permit retarded reel rotation and the wire mill can be operated to pull the wire W from the reel under a substantially constant preselected tension.

The reel will be rotated by the pulling force on the wire until the stop switch 128 is opened, or until all of the wire is pulled from the reel unless the wire breaks or becomes tangled. Upon the occurrence of either of the aforementioned events, the relay 126 will be de-energized and the full selected braking force applied as previously described.

The invention claimed is:

1. In a pay off reel for wire or the like, the combination of a frame, a drum rotatably supported on the frame, an annular basket connected with the drum for rotation therewith and adapted to support a coiled bundle of wire, guide means for receiving and guiding wire from the basket to the periphery of the drum for passage therearound, and means for retarding rotation of the drum and the basket when wire is pulled from the drum.

2. In a pay off reel for wire or the like, the combination of a frame, a drum rotatably supported on the frame, an annular basket rotatable on a common axis with the drum and adapted to support a coiled bundle of wire, a generally helical guide tube surrounding the drum and the basket for receiving and guiding wire from the basket to the periphery of the drum for passage therearound, and brake means for retarding rotation of the drum and basket to establish tension in wire being pulled from the drum without establishing any substantial pulling force on the wire between the drum and the basket.

3. In a pay off reel for wire or the like, the combination of a frame, a substantially vertical shaft rotatably supported by the frame and projecting upwardly therefrom, a drum secured for rotation with said shaft above the frame, an annular basket secured for rotation with said shaft above the drum and adapted to support a coiled bundle of wire, a generally helical guide tube surrounding the drum and the basket in spaced relationship for receiving and guiding wire from the top of the basket to the periphery of the drum for passage therearound, and

brake means engaging said shaft to retard rotation of the drum and basket to establish tension in wire being pulled from the drum without establishing any substantial pulling force on the wire between the drum and the basket.

4. In a pay off reel for wire or the like, the combination of a frame, a substantially vertical shaft rotatably supported by the frame and projecting upwardly therefrom, a generally cylindrical drum secured to said shaft for rotation therewith above the frame and having an annular basket in its upper portion comprising a bottom wall and an outer wall and an intumed top flange which is spaced from the wall of the drum and also having a cover spaced above the said top flange on the basket, the said basket being adapted to support a coiled bundle of wire, a generally helical guide tube surrounding the basket in spaced relationship for receiving and guiding wire from the top flange of the basket to the periphery of the drum below said basket for passage therearound, and brake means supported on said frame in engagement with said shaft to retard rotation of the drum whereby to establish tension in wire being pulled from the drum without establishing any substantial pulling force on the wire between the drum and the basket.

5. A pay off reel for wire or the like comprising in combination, a frame, means rotatably mounted on the frame for supporting a coiled bundle of wire and adapted to rotate when wire is pulled from the bundle, electrically operable brake means for selectively retarding rotation of the bundle supporting means and for preventing rotation thereof, means for controlling brake operation comprising a power network connected with the brake means and including a first manually adjustable resistance connectible with the brake means to control the brake energy and force for preventing rotation of the bundle supporting means, a second manually adjustable resistance and a third resistance to said brake means having a conductor movable thereacross to vary said third resistance, the said second and third resistances and the conductor being connectible in circuit with said brake means to control its energy and force for retarding rotation of the bundle supporting means, means connected with the said conductor and adapted to be suspended from wire being pulled from the bundle for movement upwardly and downwardly when wire tension respectively increases and decreases whereby to move the conductor, and switch means operable to selectively connect said first manually adjustable resistance or said second and third resistances and said conductor in series to said brake means.

6. A pay off reel for wire or the like comprising in combination, a frame, means rotatably mounted on the frame for supporting a coiled bundle of wire and adapted to rotate when wire is pulled from the bundle, electrically operable brake means for selectively retarding rotation of the bundle supporting means and for preventing rotation thereof, means for controlling brake operation comprising a power network connected with the brake means and including a first manually adjustable resistance connectible with the brake means to control the brake energy and force for preventing rotation of the bundle supporting means, a second manually adjustable resistance and a third resistance having a conductor movable thereacross to vary said third resistance, the said second and third resistances and the conductor being connectible in circuit with said brake means to control its energy and force for retarding rotation of the bundle supporting means, a pivotally supported arm connected with the conductor for simultaneous pivotal movement therewith and having a free end adapted to be supported on wire being pulled from the bundle for movement upwardly and downwardly when wire tension respectively increases and decreases whereby to move the conductor, and switch means operable selectively to connect said first manually adjustable resistance to said brake means or said second and third resistances and said conductor in series to said brake means, said switch means being operable by said arm in

one pivoted position thereof to connect said first manually adjustable resistance to said brake means.

7. A pay off reel for wire or the like comprising in combination, a frame, means rotatably supported on the frame for supporting a coiled bundle of wire and adapted to rotate when wire is pulled from the bundle, guide means for receiving and guiding wire pulled from the bundle, electrically operable brake means for selectively retarding rotation of the bundle supporting means and for preventing rotation thereof, means for controlling brake operation comprising a power network connected with the brake means and including a resistance and an electrical conductor connected with the brake means and movable across the resistance to vary the energy to the brake means and thereby to vary the retarding force, means connected with said conductor and adapted to be suspended from the wire being pulled from the bundle for movement upwardly and downwardly when wire tension respectively increases and decreases whereby to move the conductor, switch means operable to electrically disconnect said resistance and said conductor from the power network whereby to increase the energy to the brake means for preventing rotation of the bundle supporting means, and actuating means for said switch means operable by said wire suspended means at preselected positions thereof resulting respectively from wire tension increase and decrease.

8. A pay off reel for wire or the like comprising in combination a frame, means rotatably mounted on the frame for supporting a coiled bundle of wire and adapted to rotate when wire is pulled from the bundle, electrically operable brake means for selectively retarding rotation of the bundle supporting means and for preventing rotation thereof, means for controlling brake operation

comprising a power network connected with the brake means and including a resistance, a pivoted electrical conductor movable across the resistance to vary the energy to the brake means and thereby to vary the retarding force, a pivotally supported arm connected with the conductor for simultaneous pivotal movement therewith and having a free end adapted to be supported on wire being pulled from the bundle for movement upwardly and downwardly when wire tension respectively increases and decreases whereby to pivot the conductor, switch means operable by said arm in two pivoted positions thereof responsive to wire tension increase and decrease respectively to electrically disconnect said resistance and said conductor from the power network and thereby to increase the energy to the brake means for preventing rotation of the bundle supporting means.

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