March 3, 1959 C. T. LANSTROM 2,875,962

PAY-OFF REEL

Filed Aug. 8, 1956 3 Sheets-Sheet 1

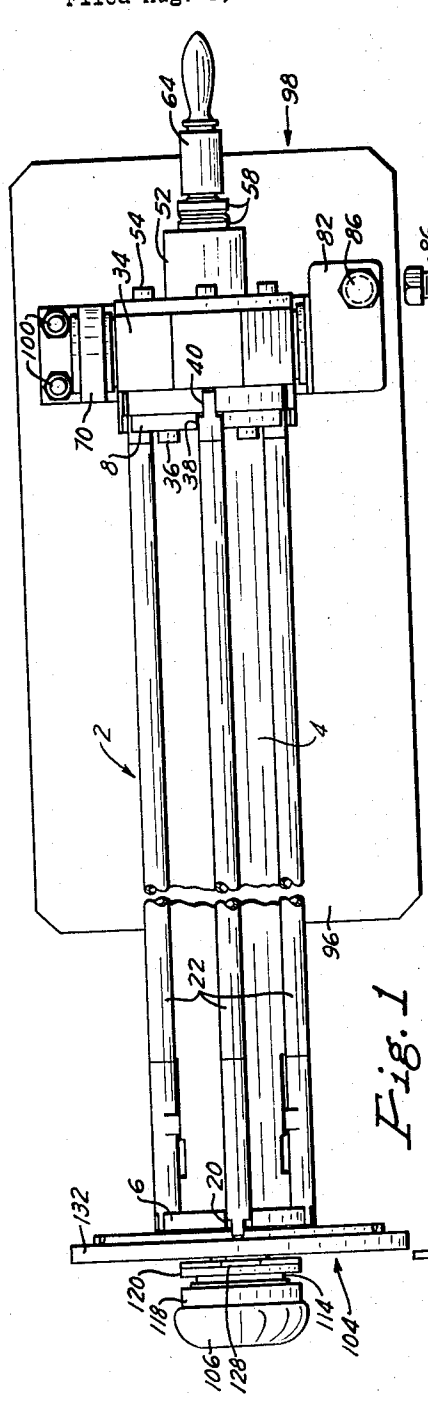


Fig. 1

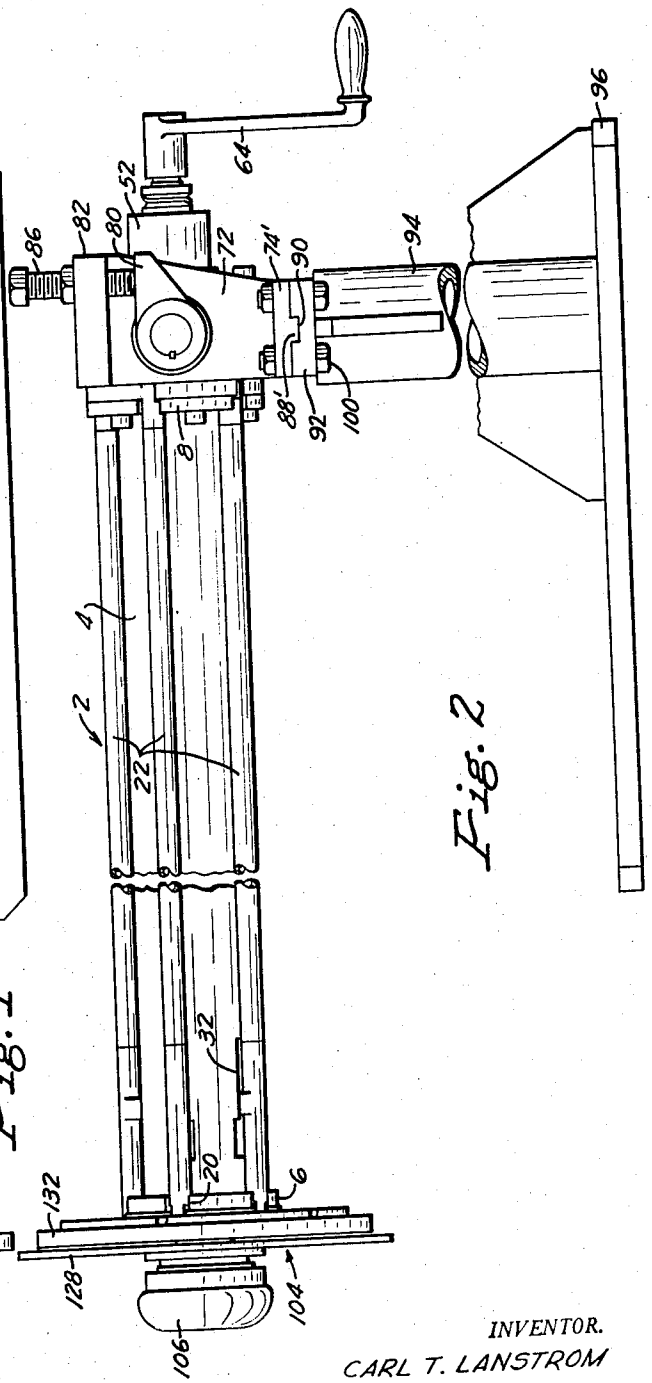


Fig. 2

INVENTOR.
CARL T. LANSTROM
BY
Donald G. Dalton
HIS ATTORNEY

March 3, 1959 C. T. LANSTROM 2,875,962

PAY-OFF REEL

Filed Aug. 8, 1956 3 Sheets-Sheet 2

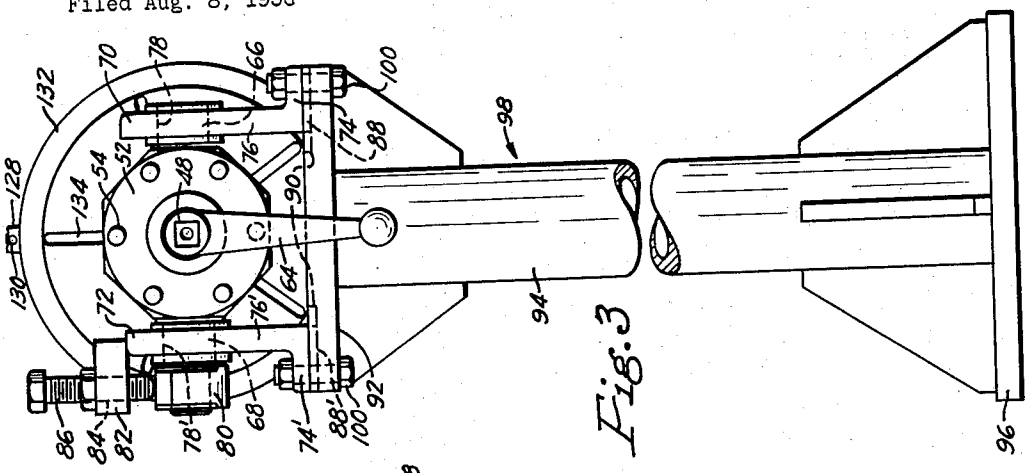


Fig. 3

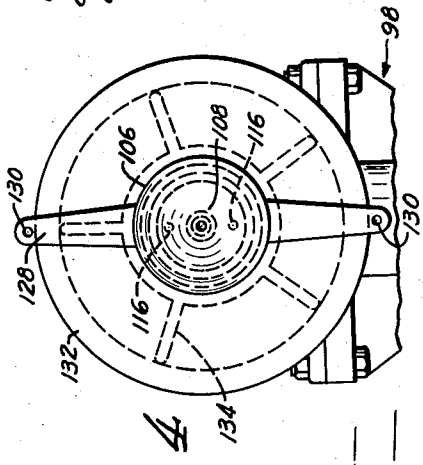


Fig. 4

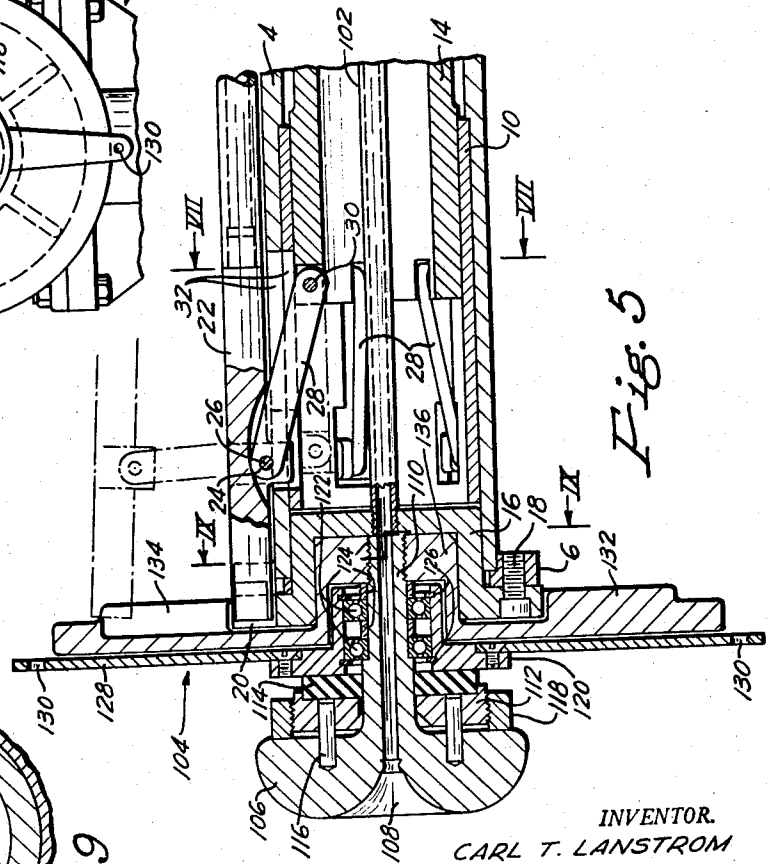


Fig. 5

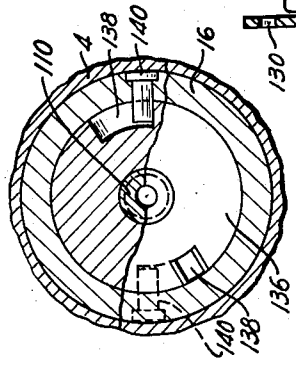


Fig. 9

INVENTOR.
CARL T. LANSTROM
BY
Donald G. Dalton
HIS ATTORNEY

March 3, 1959 C. T. LANSTROM 2,875,962

PAY-OFF REEL

Filed Aug. 8, 1956 3 Sheets-Sheet 3

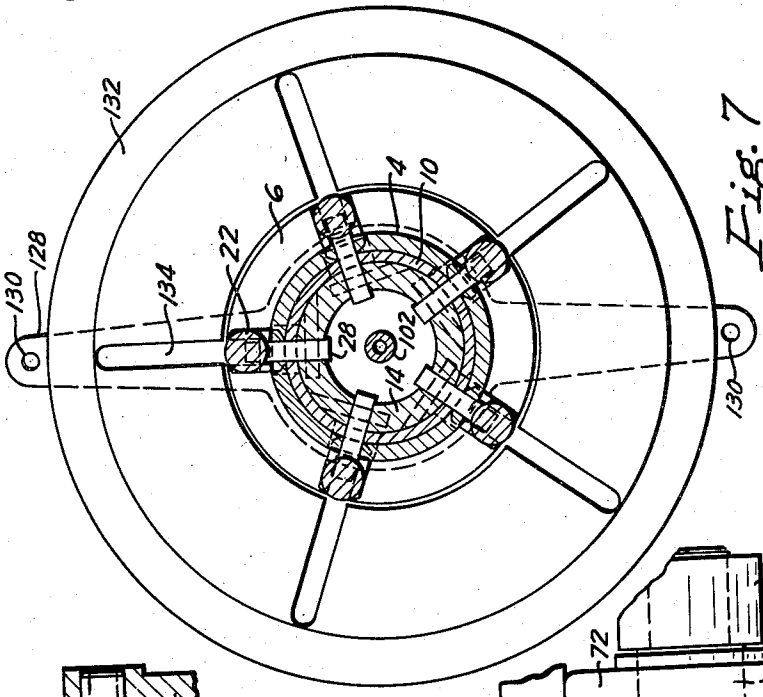


Fig. 7

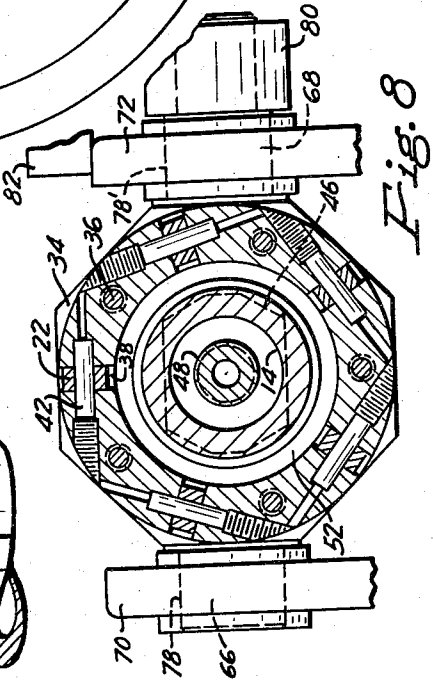


Fig. 8

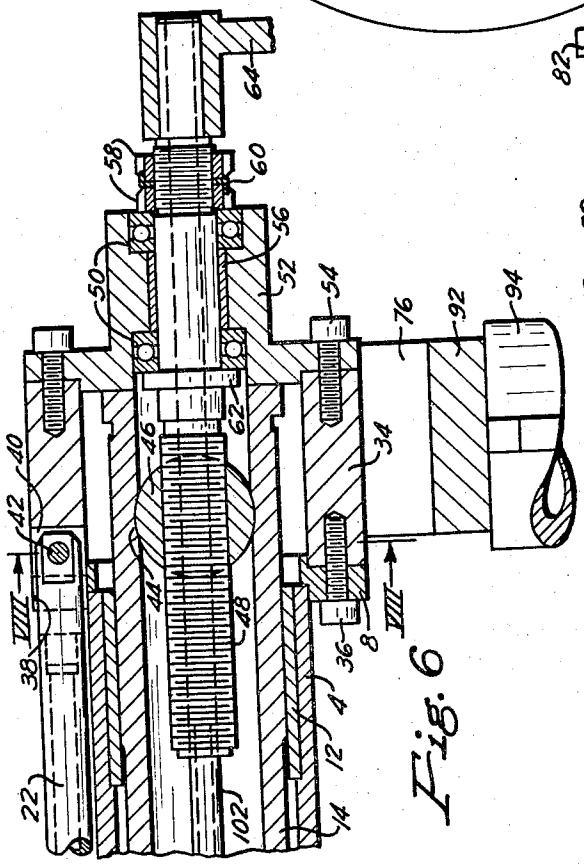


Fig. 6

INVENTOR.
CARL T. LANSTROM
BY
Donald G. Dalton
HIS ATTORNEY

United States Patent Office

2,875,962

Patented Mar. 3, 1959

2,875,962

PAY-OFF REEL

Carl T. Lanstrom, Concord, Calif., assignor to United States Steel Corporation, a corporation of New Jersey

Application August 8, 1956, Serial No. 602,761

6 Claims. (Cl. 242—128)

This invention relates to a pay-off reel and more particularly to a generally horizontal dead pay-off reel for supporting bundles of wire. To my knowledge the reels in use prior to my invention were fixed in a slightly inclined position and had only one size of mandrel or swift. Such reels are difficult to load and cannot be arranged at the best angle for feeding off all sizes of coils. Also, it is necessary to use a plurality of reels when handling a wide range of sizes of coils.

It is therefore an object of my invention to provide a pay-off reel which can pivot in a vertical plane so that it can be adjusted to best loading and unreeling positions.

Another object is to provide such a reel for handling a wide range of sizes of bundles of wire.

These and other objects will be more apparent after referring to the following specification and attached drawings, in which:

Figure 1 is a top plan view of my improved pay-off reel;

Figure 2 is a side elevation of the reel of Figure 1;

Figure 3 is a rear elevation of the reel of Figure 1;

Figure 4 is a front elevation of the reel of Figure 1;

Figure 5 is an enlarged sectional view of the front part of the reel;

Figure 6 is an enlarged sectional view of the rear part of the reel;

Figure 7 is a view taken on the line VII—VII of Figure 5;

Figure 8 is a view taken on the line VIII—VIII of Figure 6; and

Figure 9 is a view taken on the line IX—IX of Figure 5.

Referring more particularly to the drawings, the reference numeral 2 indicates a mandrel for supporting coils of wire. The mandrel 2 includes a barrel 4 having radial flanges 6 and 8 at its end, spaced internal bearings 10 and 12 and a sleeve 14 slidably mounted in the bearings 10 and 12. A retainer 16 is attached to the flange 6 by means of cap screws 18. The retainer 16 is provided with five equally spaced openings 20 arranged around its periphery for receiving spokes 22. Each of the spokes 22 has a hole 24 adjacent its forward end for receiving a pin 26 which also passes through a hole in a link 28. The other end of each link 28 is pivotally attached to sleeve 14 by means of a pin 30. Barrel 4 and bearing 10 have aligned openings 32 in their periphery for each of the links 28. As best shown in Figure 6 the flange 8 is attached to a trunnion 34 by means of cap screws 36. The flange 8 is provided with openings 38 around its periphery, one for receiving each of the spokes 22. The trunnion 34 has five slots 40 in its forward end for receiving the rearward end of the spokes 22 after they pass through the openings 38. Pins 42 pivotally connect the spokes 22 to the trunnion 34. A transverse circular opening 44 is provided through the sleeve 14 for receiving a nut 46. A hollow screw and crank handle shaft 48 is threaded through the nut 46 with its rearward end being supported in ball bearings 50. The bearings in turn are supported in a cap 52 which is connected to trunnion 34 by means of cap screws 54. A bushing 56 surrounds the shaft 48 between the bearings 50. Nuts 58, lock washer 60 and collar 62 forming part of shaft 48 hold the shaft from axial movement. A handle 64 is secured to the shaft in any suitable manner. As best shown in Figures 3 and 8 trunnion 34 is provided with aligned shaft portions 66 and 68 which are supported in trunnion brackets 70 and 72, respectively. The brackets 70 and 72 have horizontal legs or bases 74 and 74' and vertical legs 76 and 76', respectively. Bearings 78 and 78' are provided in the legs 76 and 76', respectively, for receiving shaft portions 66 and 68. Shaft 68 extends beyond the vertical leg 76' and has a lever 80 keyed thereto. (See Figure 2). A horizontal flange 82 is welded to the top of leg 76' and has a threaded opening 84 therein for receiving a screw 86, the lower end of which bears against the lever 80. The flanges 74 and 74' are provided with downwardly extending tongues 88 and 88', respectively, which are received in aligned slots 90. A horizontal plate 92 is supported on the top of a tube 94, the bottom of which is welded to a plate 96 which may be attached to the floor in any suitable manner. Parts 92, 94 and 96 are welded together to form a stand 98. The brackets 70 and 72 are secured to the plate 92 by means of bolts 100.

A tube or wire guide 102 extends through shaft 48 and is threaded into retainer 16. As best shown in Figure 5 a flipper unit assembly 104 is attached to the front end of the mandrel 2 in a manner to be described later. Flipper unit assembly 104 includes an entry guide 106, which has a bell mouth 108, and a hollow shaft portion 110. The opening in shaft 110 communicates with the opening in tube 102. A brake 112 and brake lining 114 are telescoped over the shaft 110 and are held from rotation with respect to entry guide 106 by means of pins 116. The outer periphery of brake 112 is threaded to receive an adjusting nut 118. A hub 120 is supported by ball bearings 122 which are carried on the shaft 110. Spacers 124 and lock rings 126 hold the bearings 122 in position. A flipper 128 having holes 130 in its periphery is atttached to the hub 120 by means of screws. A guide plate 132 is threaded on the end of shaft 110 to hold the parts in assembly. Guide plate 132 has five radial slots 134 for receiving the forward end of spokes 22. Hub portion 136 of guide plate 132 is provided with diametrically opposed bayonet slots 138 for receiving pins 140 attached to retainer 16.

The operation of my device is as follows:

The spokes 22 are retracted to the solid line position shown by turning the crank 64 clockwise which causes the sleeve 14 to move rearwardly pulling links 28 toward the center and causing the spokes 22 to move to their horizontal position. The adjusting screw 86 is turned to rotate lever 80 and trunnion 34 in a clockwise direction as shown in Figure 2, thus raising the mandrel 2 so that its left hand end will be raised to an angle of approximately 15° above the horizontal. The flipper unit 104 is removed by turning it clockwise until pins 140 are disengaged from the locked position in slots 138 after which the assembly is moved axially outward. Bundles of wire are then loaded over the spokes 22 until the pay-off is filled and the flipper assembly 104 is replaced by moving it axially inwardly until the pins 140 are in alignment with the slots 138 after which the assembly is turned counterclockwise. The band wires on the bundle nearest the flipper unit 104 are removed, thus loosening the convolutions of the wire so that they will feed smoothly and freely. The spokes 22 are then expanded to the loose diameter of the bundle by turning crank handle 64 counterclockwise causing the sleeve 14 to move toward the front end, thus forcing the links 28 outward and upward to raise the spokes to the broken line position

shown in Figure 5. The end of the wire is threaded through one of the guide holes **130**, through the bell mouth **108** and tube **102** and over a tension device (not shown) which is not a part of the pay-off reel and then to a spool mounted on a spooling bench. The mandrel **2** is then lowered to an operating position from zero to 15° below the horizontal by turning the adjusting screw **86** to permit the lever **80** to rotate in a counter clockwise direction as shown in Figure 2. This permits the wire to slide down on the expanded spokes **22** which keeps the proper tension on the bundles and permits easier feeding. As the wire is pulled from the bundle it causes flipper **128** to rotate. The ease and speed of rotation are determined by the amount of force exerted by the brake **112** against the hub **120**. Rotation of the nut **118** determines the pressure of the brake against the hub.

While one embodiment of my invention has been shown and described it will be apparent that other adaptations and modifictions may be made without departing from the scope of the following claims.

I claim:

1. A generally horizontal pay-off reel for bundles of wire comprising a hollow mandrel for supporting coils of wire, said mandrel including a tube, a plurality of spokes spaced about the periphery of said tube, means pivotally mounting said spokes adjacent a first end of said tube, a sleeve slidably mounted in said tube, said tube having openings in the wall thereof adjacent a second end of said tube, one opening being provided for each spoke, a link extending through each of said openings having one end pivotally connected to said sleeve and the other end pivotally connected to one of said spokes, means for moving said sleeve axially, a pivot mounting adjacent the first end of the mandrel for supporting said mandrel for limited movement in a vertical plane, means for moving said mandrel about said pivot, and a flipper rotatably mounted on the second end of said mandrel.

2. A generally horizontal pay-off reel for bundles of wire comprising a tube, a trunnion mounted adjacent a first end of said tube, means connecting said tube to said trunnion, means for supporting said trunnion for rotatable movement on a substantially horizontal axis normal to the axis of said tube, a plurality of spokes spaced about the periphery of said tube, means pivotally mounting one end of said spokes on said trunnion, a sleeve slidably mounted in said tube, said tube having openings in the wall thereof adjacent a second end of said tube, one opening being provided for each spoke, a link extending through each of said openings having one end pivotally connected to said sleeve and the other end pivotally connected to one of said spokes, means for moving said sleeve axially, an entry guide detachably connected to the second end of said tube, and means for moving said trunnion about its axis.

3. A generally horizontal pay-off reel for bundles of wire comprising a tube, a trunnion mounted adjacent a first end of said tube, means connecting said tube to said trunnion, means for supporting said trunnion for rotatable movement on a substantially horizontal axis normal to the axis of said tube, a plurality of spokes spaced about the periphery of said tube, means pivotally mounting one end of said spokes on said trunnion, a sleeve slidably mounted in said tube, said tube having openings in the wall thereof adjacent a second end of said tube, one opening being provided for each spoke, a link extending through each of said openings having one end pivotally connected to said sleeve and the other end pivotally connected to one of said spokes, a nut supported in said sleeve adjacent said trunnion, a hollow threaded shaft in threaded engagement with said nut, means carried by said trunnion for preventing axial movement of said shaft, means for rotating said shaft, an entry guide detachably connected to the second end of said tube, and means for moving said trunnion about its axis.

4. A generally horizontal pay-off reel for bundles of wire comprising a tube, a trunnion mounted adjacent a first end of said tube, means connecting said tube to said trunnion, means for supporting said trunnion for rotatable movement on a substantially horizontal axis normal to the axis of said tube, a plurality of spokes spaced about the periphery of said tube, means pivotally mounting one end of said spokes on said trunnion, a sleeve slidably mounted in said tube, said tube having openings in the wall thereof adjacent a second end of said tube, one opening being provided for each spoke, a link extending through each of said openings having one end pivotally connected to said sleeve and the other end pivotally connected to one of said spokes, means for moving said sleeve axially, an entry guide detachably connected to the second end of said tube, a flipper rotatably mounted on said entry guide, a brake bearing against said flipper to control rotation thereof, and means for moving said trunnion about its axis.

5. A generally horizontal pay-off reel for bundles of wire comprising a tube, a trunnion mounted adjacent a first end of said tube, means connecting said tube to said trunnion, means for supporting said trunnion for rotatable movement on a substantially horizontal axis normal to the axis of said tube, a plurality of spokes spaced about the periphery of said tube, means pivotally mounting one end of said spokes on said trunnion, a sleeve slidably mounted in said tube, said tube having openings in the wall thereof adjacent a second end of said tube, one opening being provided for each spoke, a link extending through each of said openings having one end pivotally connected to said sleeve and the other end pivotally connected to one of said spokes, a nut supported in said sleeve adjacent said trunnion, a hollow threaded shaft in threaded engagement with said nut, means carried by said trunnion for preventing axial movement of said shaft, means for rotating said shaft, an entry guide detachably connected to the second end of said tube, a flipper rotatably mounted on said entry guide, a brake bearing against said flipper to control rotation thereof, and means for moving said trunnion about its axis.

6. A generally horizontal pay-off reel for bundles of wire comprising a tube, a trunnion mounted adjacent a first end of said tube, means connecting said tube to said trunnion, means for supporting said trunnion for rotatable movement on a substantially horizontal axis normal to the axis of said tube, a plurality of spokes spaced about the periphery of said tube, means pivotally mounting one end of said spokes on said trunnion, a sleeve slidably mounted in said tube, said tube having openings in the wall thereof adjacent a second end of said tube, one opening being provided for each spoke, a link extending through each of said openings having one end pivotally connected to said sleeve and the other end pivotally connected to one of said spokes, a nut supported in said sleeve adjacent said trunnion, a hollow threaded shaft in threaded engagement with said nut, means carried by said trunnion for preventing axial movement of said shaft, means for rotating said shaft, an entry guide detachably connected to the second end of said tube, a guide tube supported within said sleeve and extending through said shaft, said entry guide and guide tube being in alignment when the entry guide is attached to said first named tube, a flipper rotatably mounted on said entry guide, a brake bearing against said flipper to control rotation thereof, and means for moving said trunnion about its axis.

References Cited in the file of this patent

UNITED STATES PATENTS

554,226	White et al.	Feb. 4, 1896
1,186,027	Olson	June 6, 1916
1,670,886	Fellows	May 22, 1928
1,941,378	Andrew	Dec. 26, 1933
2,257,837	Burge et al.	Oct. 7, 1941