

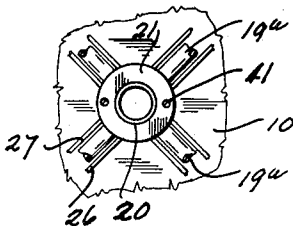
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2,946,535

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FIG. 5



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APPARATUS FOR WINDING AND COILING
WIRE, CABLE AND THE LIKE

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FIG. 3

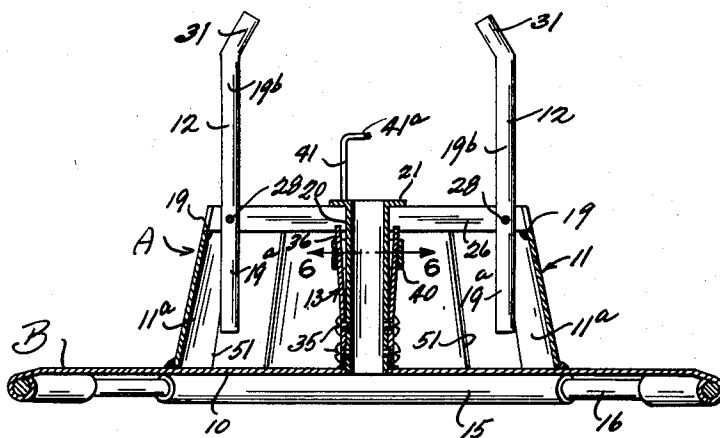


FIG. 4

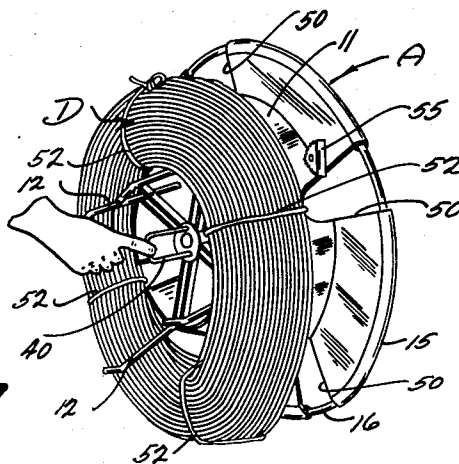


FIG. 6

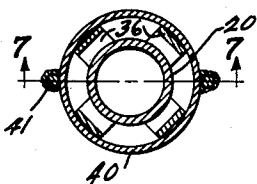
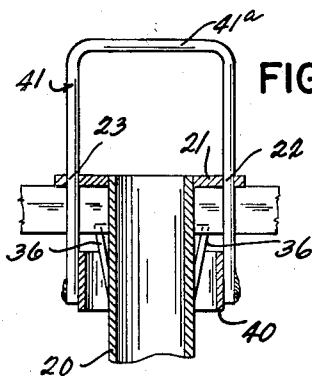


FIG. 7



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APPARATUS FOR WINDING AND COILING WIRE, CABLE AND THE LIKE

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3 Claims. (Cl. 242—84)

This invention relates to improvements in coilers for wire, cable and the like.

The primary object of this invention is the provision of a coil winder mechanism for cable, wire and the like which may be secured to a spindle or other drive means and upon which wire, cable and the like may be quickly and easily coiled and removed.

A further object of this invention is the provision of a coiler upon which wire, cable and the like may be coiled in neat tight coils of a desired length, thus facilitating the packaging of smaller coils of wire which may be taken from a large reel.

A further object of this invention is the provision of coiler means whereby wire, cable and the like which has been wound may be securely tied for shipment before removing from the coiler; thus doing away with the likelihood of loosening of the coil of wire.

A further object of this invention is the provision of a coiler for wire, cable and the like which is equipped with means for securely holding the coiled wire upon the coiler during the time that the wire, cable and the like is being coiled, which holding means is so constructed that it may readily operate for the quick and easy removal of the coiled wire, cable or the like.

A further object of this invention is the provision of a coiler for wire, cable and the like which permits the removal of coiled wire without the necessity of disassembling any portion of the coiler; thus preventing loss or misplacement of parts.

A further object of this invention is the provision of a relatively simple type of reeling and coiling machine which can be operated by a single individual for the economical and efficient coiling of wire or cable in a neat and tightly packaged condition.

A further object of this invention is the provision of a reeling and coiling machine for the winding of coils of wire or cable which presents a very rigid frame structure with means for the winding of a neat and tight coil thereon, and having a simple coil retaining means which can be operated with little effort for the release of the coil after it has been tied.

Other objects and advantages of this invention will be apparent during the course of the following detailed description.

In the accompanying drawings, forming a part of this specification and wherein similar reference characters designate corresponding parts throughout the several views:

Figure 1 is a side elevation of the improved reeling and coiling apparatus.

Figure 2 is a cross sectional view taken substantially

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on the line 2—2 of Figure 1, showing the coiler with its arms in position to permit the coiling of wire.

Figure 3 is a cross sectional view showing substantially the same structure as Figure 2, but with the coil retaining arms in coil releasing position, the coil of wire having been removed therefrom.

Figure 4 is a perspective view of the coiler in its coil releasing position, showing a coil of wire which has been securely tied being removed therefrom and the releasing means which permits its removal.

Figure 5 is a fragmentary cross sectional view taken substantially on the line 5—5 of Figure 2.

Figure 6 is an enlarged cross sectional view taken substantially on the line 6—6 of Figure 3.

Figure 7 is an enlarged cross sectional view taken substantially on the line 7—7 of Figure 6.

In the drawings, wherein for the purpose of illustration is shown only a preferred form of the invention, the letter A may generally designate the improved coiler. It includes a frame structure B, drive means C for rotating it, and winding a coil D thereon.

The frame structure B comprises a rigid plate type side wall 10, a drum 11 upon which the coil is directly wound, collapsible retaining arms 12, and arm holding and releasing means 13.

The rigid side wall structure 10 is arcuately beaded at its outer peripheral portions, at 15, for supporting a circular reinforcing bar 16 which aids in maintaining the rigidity of the side wall 10.

Fixedly secured upon the inner side of the rigid wall 10, as by welding or any other approved means, is the coil winding drum 11. This drum is of larger diameter at its inner margin 17, which is secured to the rigid side wall 10, and tapers decreasingly away from the rigid side wall 10 to the margin 18. The drum is formed of a plurality of endwise spaced segments 11^a which are concentrically arranged and secured as by welding upon the plate 10. Endwise these segments are spaced at 51, and which spaces are complementary to and aligned with openings 50 provided radially inwardly from the outer periphery of the wall 10. They terminate short of the hub structure of the reel, as shown in Figure 1. The openings 50 are widest at the bead 15 and therefrom taper convergently to their inner arcuate ends. They provide hand inserting openings to permit facile tying of the coil D by tie bands 52.

A tubular hub 20 is fixedly secured centrally to the side wall 10, as by welding. It extends axially inside of the drum 11. The outer end portion of the hub 20 has secured thereto a ring shaped flange or plate 21 having two openings 22 and 23 therethrough, the purpose of which will be subsequently described.

Fixedly secured between the drum 11 and the hub 20 at the coil removal side of the coiler are four sets 25 of elongated members relatively disposed at an angle of 90°. Each of these sets 25 comprises two retaining plates 26 and 27 parallel to each other and spaced apart only a sufficient distance to permit the swinging of the inner ends of collapsible arms 12 therebetween as will be subsequently described. These plates are radial of hub 20 and are welded or otherwise secured at their ends to the drum segments 11^a and to the hub 20. Coil retaining arms 12 are provided for each of the plate sets 25. Each of these arms 12 is pivoted intermediate its ends upon a pin 28 which is preferably fixed upon the outer

ends of the plates 26 and 27 immediately at the inner periphery of the smaller diametered end of the drum structure. The inner arm portions 19^a, when the arms 12 are extended, are collapsed in the channel-ways between the plates 26 and 27 and thereby are stabilized against rocking movement in the plane of the drum. The outer end portions 19^b are slightly angled at their extreme outer ends 31, flaring in the direction away from the plate 19 so that any wire which is being coiled upon the coiler and may be slightly askew will hit the angled portion 31 and be directed into its proper place upon the drum 11.

Referring to the arm holding and releasing means 13, I provide four spring arms 36 connected at an end of each upon the hub sleeve 20 by screws 35. The spring members terminate short of the rigid wall 10 at their attached ends and extend parallel with the hub sleeve in the direction of the arms 12. They are slightly sprung, at their outer ends, so as to lie spaced from the hub sleeve outer surface. At their outermost ends they will engage the free ends of the arm portions 19^a, as shown in Figure 2, whereby to hold said arms in locked position substantially parallel with the wall 10. It will thus be seen that when the spring arms 36 are in their expanded positions (Fig. 2) they will contact the inner side of the arms 12 inwardly of the pivot pin 28. Drum slots 19 form abutments or recesses for the arms 12 radially outwardly of the pivot pins 28, thereby holding said arms 12 in fixed coil supporting positions.

Disposed about the spring arms 36 is a circular band 40 to which is attached a U-shaped handle 41 the leg portions of which are welded to the circular band 40 and projecting through holes 22 and 23 in the plate 21 as a support. The finger engaging bight portion 41^a lies outside of plate 21. When the circular band is in the innermost position as shown in Figure 2 the spring arms 36 will tend to spread outwardly from the hub 20 and will engage the bottom ends of the arms 12, holding the arms in the movement limiting slots 19, in drum 11, in a position parallel to the rigid wall 10. When the circular band 40 is drawn outwardly by the handle 41, as is shown in Fig. 3, the spring arms 36 will be compressed and no longer contact the arms 12. As a result the arms 12 may be swung out of the movement limiting slots 19 and into positions normal to the rigid wall 10 (see Figure 4).

The improved coiler may be driven in any approved manner. I may mount it upon a drive shaft or spindle C with suitable key means between the shaft and the hub sleeve 20, or it may be driven in the manner shown in U.S. Patent 2,650,771 by the employment of a radial drive arm having an extension which may fit in an opening 60 provided in the supporting plate or wall 10.

When it is desired to remove the coil of wire from the coiler the handle 41 is merely pulled outwardly. This moves the circular band 40 along the spring arms 36, compressing the same and dis-engaging them, from contact with the arms 12, enabling arms 12 to be rotated about the pivot pin 28 into positions normal to the rigid plate 10, so that the coil D may be easily removed from the drum 11.

It is to be noted, when it is desired to again place the arms in a locked position, the inner ends of arms 12 may be swung into the slots 19 and the handle 41 collapsed. This releases the spring members 36 so that they again contact the inner sides of the arms 12, or the handle 41 may be first depressed, releasing the spring arms, and the arms 12 are moved into the slots 19, in a position parallel to the rigid wall 10. In the latter case the arms 12 will depress the spring members 36 when they are rotated and the spring members 36 will spring outward into contact with the inner edges of the arms 12 when the bottom portion of the arms 12 passes the ends of the springs 36.

Rotatably mounted upon the rigid wall 10 is an eccentric detent or toothed member 55 which is utilized to

fixedly hold the coiled wire on the drum 11 at the beginning of the coiling operation.

From the foregoing it will be obvious that I have provided a coiler which will enable the neat, tight coiling of wire, cable or the like thereupon of a desired length, providing means thereupon for quickly and easily either locking the coil in position upon the turntable or releasing the tied coil therefrom.

Various changes in the shape, size and arrangement of parts may be made to the form of invention herein shown and described, without departing from the spirit of the invention or scope of the claims.

I claim:

1. A reel for the support of coils of flexible material during winding thereon comprising a side wall frame, a drum secured to said side wall frame and extending transversely therefrom, a hub connected in right angled relation upon the central portion of said side wall frame and extending axially through said drum and in the same direction as said drum, arms pivotally mounted upon said drum spaced from the side wall frame and movable to collapsed position with respect to said drum for removal of coils of material from the drum or extensible radially of the drum into substantial parallelism with the said side wall frame, said arms having inner portions which extend into the drum when the arms are in coil retaining positions, said inner arm portions extending into close proximity to the outer end of said hub, a resilient latching spring connected to the hub for each of said arms and relatively sloping divergently in the direction of the outer end of the hub into and biased so that the arms when swung to a coil retaining position will move over and beyond the springs and engage the outer ends of the springs for fixedly holding the arms in coil retaining position, an annular member slidably mounted upon said hub and over said springs for collapsing them upon the hub into positions whereby the arms may be swung to a collapsible position upon the drum, said annular member having a handle portion extending axially from the reel beyond the outer end of said hub for easy manual operation of said annular member.

2. A reel for the support of coils of flexible material comprising a side wall having a series of spaced transverse openings therethrough, a drum secured transversely upon said side wall having a series of spaced radial openings therein complementary to and aligning and communicating with said first mentioned openings, a hollow hub disposed axially of said drum and secured to said side wall, arms pivotally mounted intermediate their ends upon said drum spaced from the side wall including inner end portions and outer coil retaining portions, a flexible spring detent mounted upon said hub for each of said arms biased so that the inner end portions of said arms will contact with the detents at the opposite side of the arm pivots from said coil retaining portions whereby said outer retaining portions of said arms will be held substantially parallel to said side wall in projecting relation beyond the drum periphery, a movable member mounted upon said spring detents, and means connected to said member for moving it away from said side wall and compressing said detents out of locking relation with respect to the inner end portions of said arms whereby said arms can be pivoted from positions substantially parallel to said side wall into positions substantially normal to said side wall to enable release of a coil of wire from the drum.

3. A reel for the support of coils of flexible wire comprising a side wall, a drum secured transversely upon said side wall, a hollow hub disposed axially of said drum and secured to said side wall, arms pivotally mounted intermediate their ends upon said drum spaced from the side wall including inner end portions and outer coil retaining portions, a flexible spring detent mounted upon said hub for each of said arms biased so that the inner end portions of said arms will contact with the detents at the opposite side of the arm pivots from said coil retaining portions

whereby said outer retaining portions of said arms will be held substantially parallel to said side wall in projecting relation beyond the drum periphery, a movable member mounted upon said spring detents, and means connected to said member for moving it away from said side wall and compressing said detents out of locking relation with respect to the inner end portions of said arms whereby said arms can be pivoted from positions substantially parallel to said side wall into positions substantially normal to said side wall to enable release of a coil of wire from the drum.

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