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COILING MECHANISM

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My invention relates to coil winding devices for use in the coiling of wire and/or rods of unlimited lengths and more particularly to a device which provides a means for the easy removal of a finished coil of wire without the necessity of interrupting the progress of the wire and/or rod or the stopping of the machine, thereby saving the time so lost, and has for its object the production of a machine for continuously forming coils of rod or wire from an indefinitely large scurce of supply, with the coils of any desired weight, permitting the removal of the coils from the coiling mechanism without interruption of the feed of the wire or rod to the coiling mechanism.

My invention consists in mounting a drum on a rotating spindle, which is a part of a flyer of a standard coil forming machine, holding this drum against rotation by a plurality of movable fingers and laying the coil about its periphery while supporting the coil on these movable fingers.

When the weight of the coil reaches a predetermined amount or has received a predetermined length of wire, these fingers are momentarily withdrawn and the coil is lowered out of position, giving way to the succeeding coil which is then coiled and formed upon the fingers like the first coil.

The foregoing and other features of my invention will now be described in connection with the accompanying four sheets of drawings forming part of this specification in which I have represented my device in its preferred form after which I shall point out in the claims those features which I believe to be new and of my own invention.

In the drawings:

Figure 1 is a side elevation of my coil winder in its preferred form in part section.

Figure 2 is a front elevation thereof in part section.

Figure 3 is a top view.

Figure 4 is a section through the drum along the line 4—4, Figure 2.

Figures 5, 6, 7, 8 and 9 are diagrammatic views, showing the relative position of the two sets of fingers during the completion of a coil and its removal from the drum.

Figure 10 is a detail of the cam operated valve controlling the air cylinder operating the set of fingers having radial movement with respect to the drum.

Figure 11 is a detail of the cam operated valve controlling the air cylinder operating the set of fingers having longitudinal movement with respect to the vertical axis of the drum.

In the carrying out of my invention I employ a drum 20 mounted on shaft 21 which is suspended from a rotating flyer 22. The shaft 21 turns in bearings 23 and 24 provided for the purpose in the drum, which is held against rotation by a plurality of fingers 25. These fingers are pivotally mounted at pivots 26 so that the horizontal portion 27 of the fingers which project toward the drum move radially to and from the drum 20 and engage the notches 28 therein while the fingers are in their normal position. The horizontal members 27 provide a support upon which the coil is formed by the rotation of the flyer 22. While the action of the flyer in coil forming is well known in the art and should not require any further description here, the type shown for purpose of illustration is the pipe type in which the flyer 22 is a pipe mounted to turn in bearings 29 and 30 and rotated through the spur gears 31 and 32, main shaft 33 and pulley 34 from any source of power (not shown).

The wire 72 is fed into the top of the machine and travels through the hollow flyer 22 and is laid in coils about the drum 20 on the finger supports 27.

The fingers 25 are provided with adjustment 35 so that the proper engagement with the drum can be obtained and they may be provided with a spring 36 to take care of any unevenness in the slots.

When the coil is formed by motion of the rotating flyer 22 around the drum 20, it is supported upon the projections 27 of the fingers 25 until a predetermined weight of coil or desired length of strand is had, when the fingers 25 are momentarily withdrawn allowing the coil to drop below the fingers, after which the fingers 25 are returned to their original position.

The fingers 25 are each provided with an enlarged cylindrical hub 37 through which the pivot 26 passes. On the outside periphery of this hub I provide a cam slot 38. Adapted to travel in these slots 38, I provide a plurality of rollers 39, one for each finger 25, mounted on studs 40 to the oscillating ring 41. The rotation of this ring moves the fingers 25 away from and toward the drum 20 as will be readily understood.

The ring 41 is moved by air cylinder 42 which is connected to the oscillating ring 41 through piston rod 43, universal joint 44 and stud 45.

The movement of the ring 41 is through the air cylinder 42, the piston of which is controlled