WEB WINDER REEL

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This invention relates to web reels or winders, particularly those employed in winding a web of paper being formed on a paper making machine. These reels usually consist of a winder drum, a pair of arms for supporting a winder roll in contact with the winder drum until the web has been attached to the winder roll and the winding operation commenced. Thereupon, the arms are moved about the axis of the winder drum to effect transfer of the winder roll while the web is being wound thereon in action of the drum to a second pair of arms. The second pair of arms serve to support and guide the winder roll until the roll has been completely wound. Inasmuch as the roll is supported and driven by the winder drum during the winding operation, the second pair of arms are mounted to permit movement of the axis of the roll away from the winder drum as the diameter of the roll increases.

When the roll has been completely wound, the web is severed and connected to a new roll then positioned in the first pair of arms and the winder roll is removed from the second pair of arms during the initial winding of the second roll. With this arrangement, the reel is operable continuously without necessitating stopping or slowing down the paper making machine.

It is necessary to quickly remove the winder roll from the second pair of supporting arms in order that they may be available to receive the succeeding roll on which the web is being wound immediately after being severed from the completely wound roll.

The completely wound rolls are relatively large in diameter and run in weight from 1000 pounds to several thousand pounds. Accordingly, when the web is severed from the wound roll and the roll is moved out of engagement with the winding drum, there is considerable momentum to the roll and it continues to rotate in the second pair of supporting arms for a considerable period of time which tends to delay the removal of the wound roll.

This invention has as an object a web winder reel apparatus including a braking structure which functions to quickly apply a braking force to the completely wound rolls, whereby rotation of the wound roll can be stopped immediately upon severing the web therefrom, and the roll removed from the supporting arms.

The invention consists in the novel features and in the combinations and constructions hereinafter set forth and claimed.

In describing this invention, reference is had to the accompanying drawings in which like characters designate corresponding parts in all the views.

Figure 1 is a top elevational view of a winder embodying my invention.

Figure 2 is an end elevational view of the machine shown in Figure 1.

Figure 3 is a view taken on line 3—3, Figure 2.

The reel consists of a suitable framework including side members 10 secured to base plates 11, as by screws 12. The side members 10 are mounted in spaced apart relation and a winder drum 13 is arranged intermediate the side members on a shaft 14 journalled in bearings 15 mounted on the side members 10 adjacent one end thereof. A power drive is connected to the shaft 14 through a coupling 16.

The winder roll 17 is provided with journals 18 which are recessed in the upper forked ends 19 of a pair of supporting arms 20. The arms 20 are mounted for rotation on the shaft 14 and are formed with gear quadrants 21 arranged in mesh with pinions 22 mounted on a shaft 23 journalled in bearings 24 on the side members 10. A gear 25 is secured to one end of the shaft 23 and meshes with a pinion 26 mounted on a stub shaft to which is secured a hand wheel 27. With this arrangement, the arms 20 are movable about the axis of the shaft 14 by rotation of the hand wheel 27. The arms 20 are locked against movement by lock members 28 mounted on a shaft 29 journalled in the side members 10 and provided at the front side of the machine with an operating handle 30.

A shaft 34 is journalled in bearings 35 at the opposite end of the frame. This shaft has affixed to it a second pair of arms 36 also provided with their upper ends with yoke members 37 pivotally mounted to the arms 36, as at 38, and being adjusted about the pivot by screws 39.

The arms 36 are likewise provided with gear quadrants 40 arranged in mesh with pinions 41 secured to a shaft 42 also journalled in the frame. Rotation is imparted to the shaft 43 by a hand wheel 44 through a gear reduction 45, whereby the arms 36 are moved toward and from the winder drum 13.

It will be understood that the winder roll 17 is placed in the arms 20 when the same are in vertical position shown in Figure 2. The web 46 is secured to the roll which is driven in contact with the winder drum 13. During this initial winding period, the rolls 17 rotate in their journals 18 positioned in the forked ends 19 of the arms 20. The arms 36 are moved clockwise to the position shown in Figure 2 and as soon as
the web has started to wind on the roll 17, the arms 20 are moved counter-clockwise Figure 2, whereby the inner bearing members 48 on roll 17 are positioned in the forks 37 of arms 36. As the diameter of the roll being wound increases, the arms 36 move counter-clockwise away from the winder drum 15, whereby the journals 19 of the roll are moved out of engagement with the forks 19 of the arms 20, permitting these arms to be returned to vertical position for the reception of the next empty winder roll.

When the roll is completely wound, the arms 36 have been moved to, or toward, vertical position as indicated in dotted outline, Figure 2. At this time, the web is severed and started on the empty roll 17 carried by the arms 20.

The wound roll is removed from the arms 36 by means of a hoisting apparatus hooked into the eye bolts 50 mounted on the journal bearings 16. However, before the roll can be removed, it is necessary to stop the rotation of the roll. Inasmuch as these rolls run into several thousand pounds of weight, there is considerable momentum and the operators are thus delayed in the removal of the wound roll.

This invention has to do particularly with a brake mechanism for quickly bringing the rotating wound roll to a stop. A bracket 52 is secured to a projecting portion 53 of shaft 34. A cylinder 54 is adjustable mounted on the bracket 52 so that the axis of the cylinder may be positioned in axial alinement with the roll 17 when it is positioned in the forks 37 of the arms 36. The piston rod 56 extends from the cylinder 54 and has affixed to its outer end a brake member 57 arranged in confronting relation to a conical member 55 secured to the end of the roll shaft. Due to the fact that the bracket 52 is armed to the shaft 34, the brake member 57 moves with the arms 36 and is always positioned in axial alinement with the roll 17.

After the roll has been completely wound, fluid is applied to the cylinder 54 through a conduit 58 to apply pressure to the back side of the piston and move the brake member axially into engagement with the conical member 55 applying a braking force and quickly bringing the rotating roll to a stop, whereupon fluid is applied through conduit 51 to the front side of the piston, moving the brake member 57 out of engagement with member 58 to permit removal of the roll.

The braking structure described is economical to build and is particularly economical and convenient to be incorporated in winding reel structures now in use. Due to the fluid actuating mechanism, the braking member 57 can be moved into engagement with the winding roll with any desired frictional contact, whereby the roll can be quickly brought to a standstill without effecting any undue stress upon the reel.

What I claim is:

1. A web winding reel comprising a frame, a winder drum journalled in the frame, a shaft journalled in the frame and extending in parallel spaced relation to the drum, a pair of roll supporting arms mounted on said shaft in spaced relation, like ends of said arms being formed to rotatably receive a winder roll, said arms being movable about the axis of said shaft to permit movement of the roll toward and from the winder drum, a radially extending bracket fixedly secured to the shaft, a brake member carried by said bracket and arranged in axial alinement with the winder roll and movable therewith about the axis of said shaft, and actuating means operable to move said brake member into and out of braking engagement with said winder roll.

2. A web winding reel comprising a frame, a winder drum journalled in the frame, a shaft journalled in the frame and extending in parallel spaced relation to the drum, a pair of roll supporting arms fixedly secured to said shaft in spaced apart relation, like ends of said arms being formed to rotatably receive a winder roll, said arms being movable about the axis of the shaft to permit movement of the roll toward and from the winder drum, a radially extending bracket fixedly secured to the shaft, a brake member carried by said bracket in axial alinement with the winder roll and movable therewith about the axis of the shaft, and actuating means operable to move said brake member axially of the winder roll into and out of braking engagement therewith.

3. A web winding reel comprising a frame, a winder drum journalled in the frame, a shaft journalled in the frame and extending in parallel spaced relation to the drum, a pair of roll supporting arms fixedly secured to said shaft and being adapted to rotatably support a winder roll in contact with said winder drum, a bracket fixedly secured to said shaft, a fluid operated cylinder and piston structure carried by said bracket in axial registration with said winder roll, a brake member carried by said cylinder and piston structure and being movable thereby axially into and out of braking engagement with said winder roll.

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REFERENCES CITED

The following references are of record in the file of this patent:

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<th>UNITED STATES PATENTS</th>
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