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DELIVERY MECHANISM FOR PAPER ROLLS IN PAPER MAKING MACHINES

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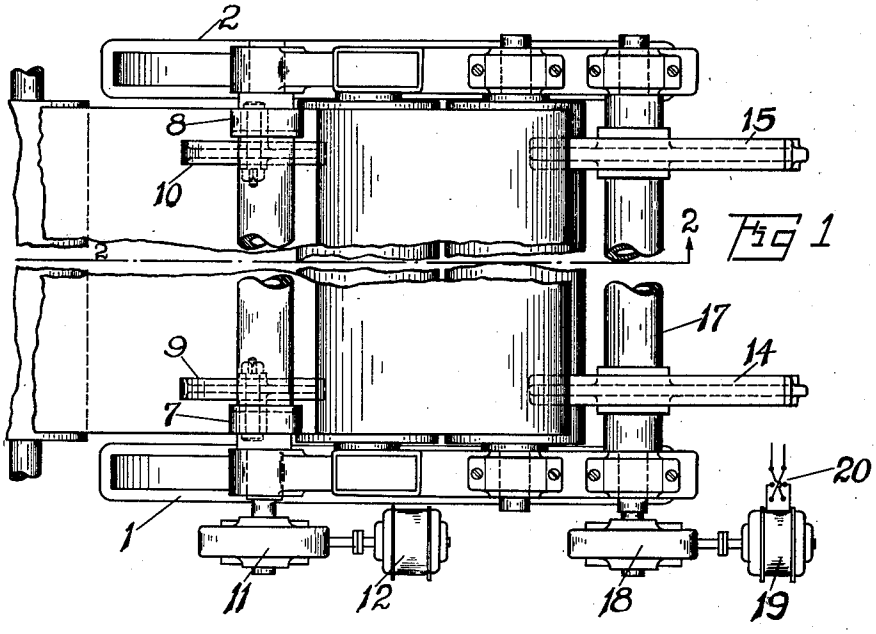
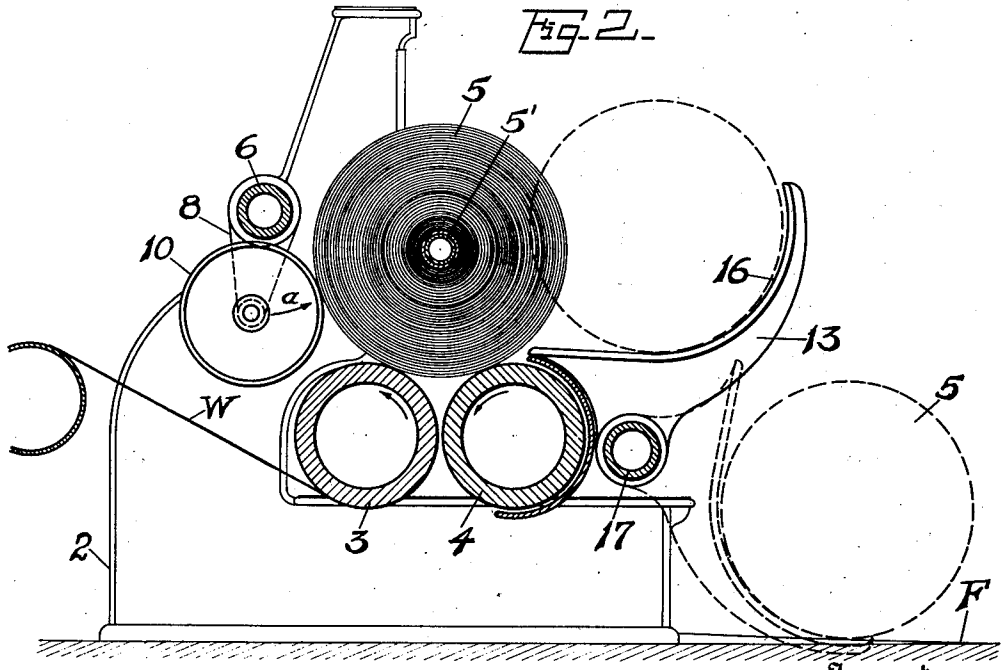


Fig 1

Fig 2



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UNITED STATES PATENT OFFICE

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DELIVERY MECHANISM FOR PAPER ROLLS IN PAPER MAKING MACHINES

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This invention relates to certain improvements in roll handling mechanisms for paper winding machines.

In paper winding machines, particularly those used for winding the large web rolls produced by Fourdrinier and like paper making machines, the rolls are wound on a spindle in a winding mechanism, which consists of a pair of driven winding rolls, around one of which the web passes, the web roll resting on the winding rolls and being built up into a web roll by the rotation of the winding rolls. After the web roll has been wound to the desired diameter, it is necesary to remove it from the winder to a delivery point, where it may be prepared for shipment or otherwise handled. Ordinarily the web rolls are lifted from the winding mechanism by suitable devices taking hold of the core or spindle. In large paper making machines where the web rolls are wide, particularly those producing web rolls for news print, the rolls are very large and heavy, and lifting them from the winder by means of overhead hoisting apparatus takes up a great amount of time and is undesirable for other reasons. Furthermore, the spindle on which the paper is wound is limited in diameter and is, therefore, not sufficiently rigid to afford a satisfactory means for lifting the rolls, particularly with wide rolls.

Furthermore, it is important in fast paper making machines that the time consumed in handling the rolls be reduced as far as possible, so that the rolls may be gotten out of the way as rapidly as the paper is produced.

It is the especial object of the present invention to produce a simple construction for delivering the web roll from the winding mechanism in which the roll is pushed off the winder onto a receiver from which it may be delivered in any suitable manner.

A further object of the invention is to produce such a construction which can be readily and easily operated, and which shall require a minimum amount of space.

With these and other objects not specifically referred to in view, the invention consists in certain novel parts, arrangements and combinations which will be described in connection with the accompanying drawings and the novel features pointed out in the claims hereunto annexed.

In these drawings,—

Figure 1 is a plan view of the improved delivery mechanism, and

Figure 2 is a side view, partly in section, of the construction shown in Figure 1.

Referring now to these drawings, the invention consists generally in the provision of a receiver located, preferably, at one side of the winder mechanism, in combination with a pushing device which acts to push the web roll from the winder onto the receiver, the receiver being thereafter operated to deliver the roll in any desired manner. While the specific embodiment of the invention may vary widely, in the particular construction illustrated there is shown a winder mechanism of conventional form including side frames 1, 2, and a pair of winding rolls or drums 3, 4 suitably journalled in the frames, these drums being driven drums rotated in any suitable manner by mechanism not illustrated. The web of paper W, as it comes from the paper making machine, is wound into a web roll 5 on a spindle 5′, the roll being wound by the winding drums in the usual manner.

In accordance with the invention, the mechanism for pushing the web roll off the winding drums onto the receiver is located closely adjacent the winder drums and, preferably, at the long side of the web roll. While the pushing mechanism may vary somewhat in construction, a simple one is that shown, in which there is provided a shaft 6 suitably supported in the side frames, which shaft is provided with a number of arms 7, 8, in which are supported a pair of pushing spools or discs 9, 10. This shaft is rotated through suitable gearing, indicated at 11, from a motor 12. On the rotation of the shaft in the direction of arrow *a* in Figure 2, the pushing spools or discs are forced against the roll 5, pushing it from its position on the drums 3, 4 and onto a receiver, indicated by the numeral 13.

This receiver may vary widely in construction, but, as shown, will be located adjacent the long side of the winding mecha-

nism and in a position whereby the roll may be readily pushed or shoved onto it. In the particular construction illustrated, this receiver is in the form of a number of cradle arms 14, 15, which preferably have curved roll receiving surfaces 16. These arms are fast on a rock-shaft 17 suitably supported in bearings in the sides 1, 2, before referred to, and this rock-shaft may be operated to cause the cradle arms to deliver the roll as desired. In the particular construction illustrated, the roll is lowered by the cradle arms to the floor level, indicated by the letter F, where the web roll may be moved away for subsequent handling. Any suitable means may be employed for operating the rock-shaft to cause the arms to deliver the web rolls, but in the preferred construction these means will be such that the cradle arms after delivering a web roll will return to a position to receive a successive web roll. In the particular construction illustrated, this is effected by means of gearing, indicated at 18, this gearing being operated by a reversing motor 19, in turn controlled by a reversing switch, indicated at 20.

The operation of the device will be clear from the foregoing description but may be briefly summarized as follows:

When the roll 5 has reached the desired diameter, the web is severed in the usual manner, and the shaft 6 is rotated by the motor 12 through one revolution, which pushes the roll 5 from the drums 3, 4 onto the receiver 13, by means of the spools or discs 9, 10. The shaft having made a complete revolution comes to rest in its original position. The operator then causes the movement of the rock-shaft 17, which moves the cradle arms from the position shown in full lines in Figure 2 to the position shown in dotted lines, where the web roll 5 is delivered onto the floor. When the parts have reached this position, the reversing switch stops the rotation of the shaft to the right and causes its rotation to the left to bring the cradle arms back to the position shown in full lines in Figure 2. It will be understood, of course, that a limit switch is or may be employed for stopping the motor 12 after it has caused one rotation of the shaft 6.

With this construction therefore, the web rolls may be readily and quickly removed from the winding mechanism and delivered as desired without the necessity of overhead hoist or the use of the spindle for manipulating the rolls.

While the invention has been shown and described in its preferred form, it will be understood that various changes may be made in the specific construction and operation of the parts without departing from the invention as defined in the claims hereunto annexed.

What is claimed is:

1. In a winding mechanism for paper winding machines, the combination with winding rolls, of a receiver mounted closely adjacent the winding rolls, pushers for pushing a roll of paper from the winding rolls onto the receiver, and means for moving the receiver to deliver the paper roll.

2. In a winding mechanism for paper winding machines, the combination with winding rolls, of a receiver mounted closely adjacent the winding rolls located beside and at substantially the level of the winding rolls, pushers for pushing a roll of paper from the winding rolls onto the receiver, and means for moving the receiver to deliver the paper roll at another level.

3. In a winding mechanism for paper winding machines, the combination with winding rolls, of a receiver located beside and at substantially the level of the winding rolls, pushers for pushing a roll of paper from the winding rolls onto the receiver, and means for rocking the receiver to deliver the paper roll at another level and for returning the receiver to position to receive another roll.

4. In a winding mechanism for paper winding machines, the combination with winding rolls, of a receiver, pushers for pushing a roll of paper from the winding rolls onto the receiver, and means for rocking the receiver to deliver the paper roll and for returning the receiver to position to receive another roll.

5. In a winding mechanism for paper winding machines, the combination with winding rolls, of pushers at one side of the rolls, means for operating the pushers to remove a paper roll sidewise from the winding rolls, a receiver mounted adjacent the winding rolls onto which the paper roll is moved by the pushers, and means for moving the receiver to deliver a paper roll.

6. In a winding mechanism for paper winding machines, the combination with winding rolls, of pushers at one side of the rolls, means for operating the pushers to remove a paper roll sidewise from the winding rolls, a receiver mounted adjacent the winding rolls and onto which the paper roll is moved by the pushers, and means for moving the receiver to deliver a paper roll and for returning the receiver to position to receive another roll.

7. In a winding mechanism for paper winding machines, the combination with winding rolls, of pushers at one side of the rolls, means for operating the pushers to remove a paper roll sidewise from the winding rolls, a pivoted receiver, and means for swinging the receiver from paper roll receiving position to a delivery position and back to receiving position.

8. In a winding mechanism for paper winding machines, the combination with

winding rolls, of pushers at one side of the rolls, a shaft therefor, means for operating the shaft to cause the pushers to push a roll sidewise from the winding rolls, a receiver, a shaft therefor, and means for operating the shaft to rock the receiver from a roll receiving position to a delivery position and back to receiving position.

9. In a winding mechanism for paper winding machines, the combination with winding rolls, of pusher rolls at one side of the winding rolls, means for operating the pusher rolls to push a paper roll off the winding rolls, a receiver mounted adjacent the winding rolls having a receiving surface curved to cradle a paper roll, and means for moving the receiver to deliver a paper roll.

10. In a winding mechanism for paper winding machines, the combination with winding rolls, of pushers at one side of the winding rolls and movable to engage a paper roll and push it off the winding rolls, a shaft therefor, a motor for operating the shaft, a receiver at the other side of the winding rolls for receiving a paper roll pushed off the winding rolls, a shaft therefor, and a motor for operating the shaft in either direction.

11. In a winding mechanism for paper winding machines, the combination of means including a winding roll and cooperating abutment for winding a web of paper into a roll, a receiver mounted adjacent the winding rolls, pushers for pushing a roll of paper from the winding means onto the receiver, and means for moving the receiver to deliver the roll.

12. The combination with a pair of winding drums of a roll handling device comprising a pivotally mounted cradle having a plane surface adapted to be swung into a position with said plane surface contiguous to one of said drums for receiving a roll from said winding drums, said cradle also having a curved roll retaining surface and means for swinging said cradle about its pivot point to change the inclination of said curved retaining wall and thereby effect a gravity discharge of said roll.

In witness whereof, we have hereunto set our hands.

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