

Aug. 6, 1957

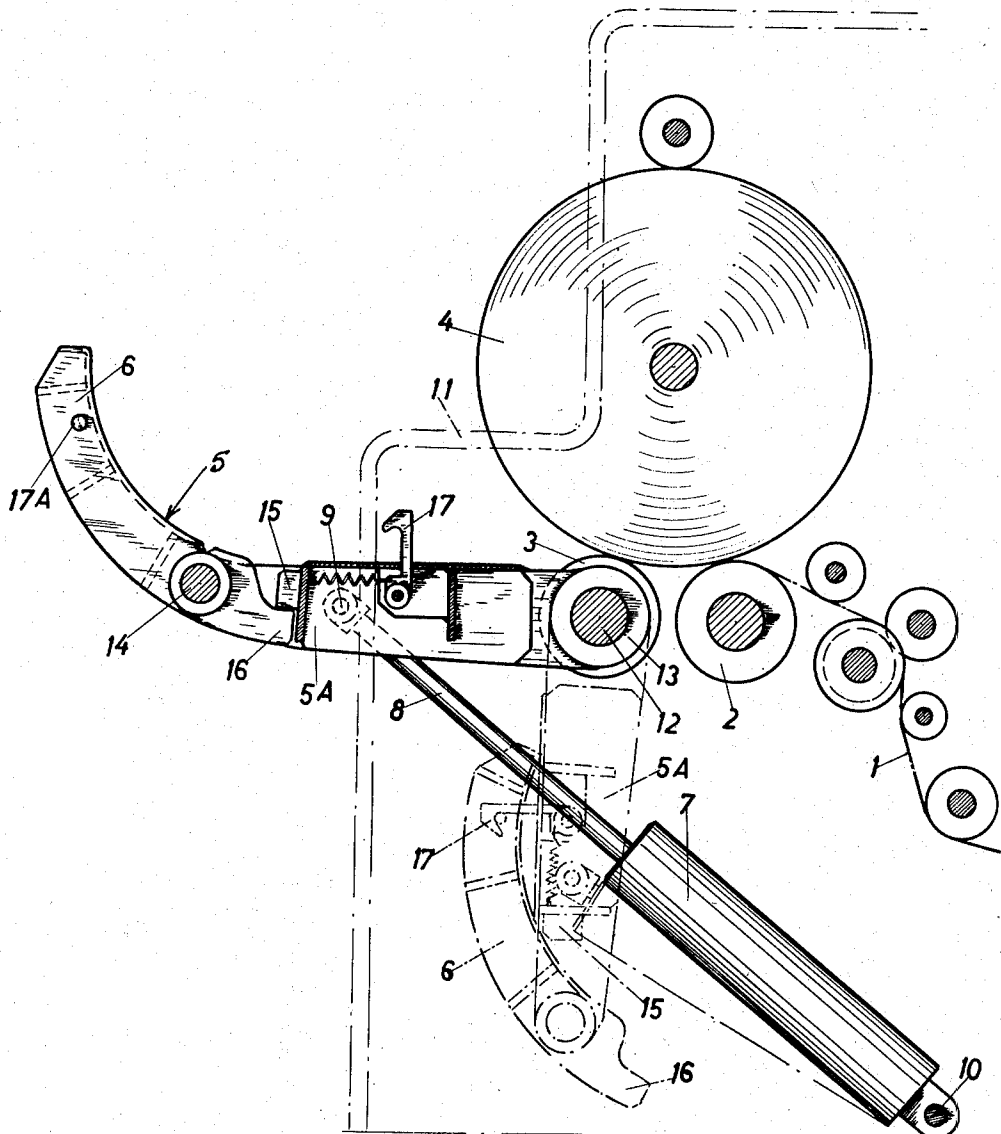
E. KUSEL
DEVICE ON A WINDING MACHINE OR THE LIKE
FOR LOWERING READY WOUND ROLLS

2,801,810

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2 Sheets-Sheet 1

Fig. 1



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Fig. 2

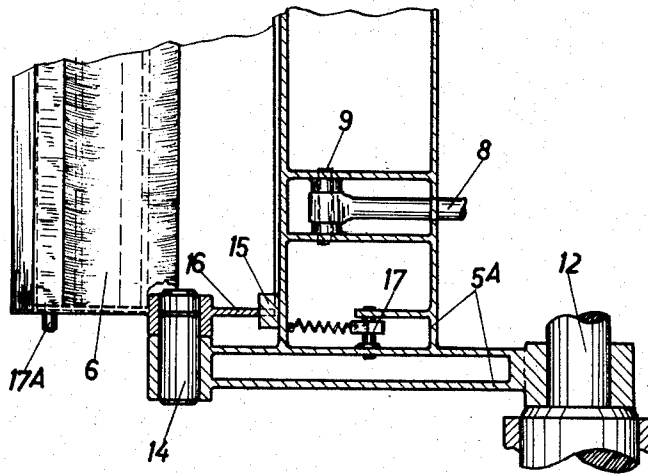


Fig. 4

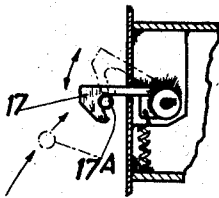
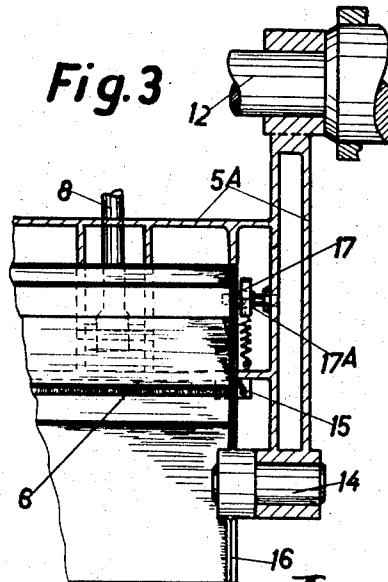


Fig. 3



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DEVICE ON A WINDING MACHINE OR THE LIKE FOR LOWERING READY WOUND ROLLS

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4 Claims. (Cl. 242—66)

The present invention relates generally to machines for winding paper and the like on rolls, and, more particularly to an assembly whereby the completed roll is lowered from operating position to a lower level, such as the floor, from which location, the roll may be moved to the desired point. While the invention is especially efficacious for use in winding machines of the type having two supporting rollers for the winding core or roll, it is to be understood that the assembly may be employed in connection with other winding machines.

Heretofore, it has been proposed to lower the completed roll by swinging the pair of supporting rollers carrying the winding roll from its winding position and allowing the roll to move along a discharge rail mounted on the winding machine frame. Such a mechanism is undesirable in that special means, preferably hydraulic means is required to initiate the swinging movement of the supporting rollers, thereby materially augmenting the cost of manufacture. Furthermore, such an assembly requires the use of inclined discharge rails for allowing the completed roll to move down to the floor level.

Another lowering assembly employs arms which receive the completed roll from which arms the wound roll moves down upon the lower level. The primary objection of the prior units is that they occupy considerable space, and, in the inoperative position, the lowering assemblies interfere with the efficient handling of the winding machine by the operators.

Accordingly, a salient object of the present invention is to overcome the above and other objectionable characteristics present in the art.

To accomplish the foregoing and other advantageous objects, the invention broadly comprises a supporting structure for the completed roll pivotally mounted on the shaft of one of the pair of supporting rollers for the roll core for movement to a lower level, a portion of the supporting structure being foldable in the direction of the axis of the winding roll when the supporting structure is inoperative to consume but little space, means to maintain the supporting structure in its operative position, and power means to move the supporting structure about its pivotal connection to the shaft of the supporting roller to either raise or lower the supporting structure.

More specifically, the supporting structure includes a rear section pivoted to the shaft of the forward supporting roller, a front section pivoted to the rear section, complementary means on the respective sections to maintain the sections in proper relationship in the operative position, a piston and cylinder assembly connected to the rear section to raise and lower the supporting structure, and locking means to retain the respective sections in the folded position when the structure is in the inoperative position.

From a study of the ensuing description, further objects and advantages of the invention will become more

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readily apparent to one skilled in the art, and, the invention consists in the details of construction and in the arrangement and combination of parts to be hereinafter more fully set forth and claimed.

In describing the invention in detail, reference will be had to the accompanying drawings forming part of this application, wherein similar reference numbers denote the same or similar parts in the several views and in which:

Figure 1 is an elevational view, partly broken away and partly in cross-section of a winding machine employing the present invention.

Figure 2 is a top view of the front part of the arrangement shown in Fig. 1, partly broken away and partly in cross section.

Figure 3 is a front view of part of the arrangement in a folded position, partly broken away and partly in cross section.

Figure 4 is a side view of the locking elements.

As shown in the drawings, the frame of the winding machine which can be of any suitable type is denoted generally 11 and paper web 1 in its advance movement is guided over guide means in the conventional manner for winding on roll 4 which is guided between supporting or carrying rollers 2 and 3 journaled in the frame. When the roll 4 has attained its predetermined diameter, it can be moved by a ram or the like (not shown) onto a lowering assembly indicated generally 5, which assembly functions to move the wound roll to a lower level.

The assembly 5 which constitutes the salient aspect of the invention includes a rear section 5A and a forward section 6 and it will be noted that the upper surface of the sections is curved to conform to the radius of the wound roll so that when the roll 4 is moved onto the assembly 5, it cannot be accidentally displaced therefrom when the assembly 5 is lowered, as will later be described.

The assembly 5 is mounted for pivotal movement by means of a split or two-part bearing 13 supported by the shaft of the roller 3, indicated 12 adjacent the side of the frame 11. The front section 6 is pivoted to the rear section 5A by a bolt or the like 14, and, to prevent downward movement of the section 6 when the assembly is in the operative or lowering position, it will be seen that stop lug 15 adjacent the front zone of the section 5A coacts with an offset abutment 16 to restrict such movement. Furthermore, when the assembly is not in use and is in its folded position as illustrated by the dot-dash lines in Figure 1, the lug 15 will limit the amount of inward pivotal movement of the front section 6.

As previously mentioned, movement to the lowering assembly is effected by power means which is a cylinder 7 pivoted to the frame 11 as at 10. Piston rod 8 carrying a piston head (not shown) is pivotally connected to the rear section 5A as indicated at 9. An operating medium such as air can be introduced into the cylinder in any convenient manner.

While the operation of the invention is deemed to be apparent from the foregoing disclosure, it may be summarized as follows:

Assuming that the desired amount of paper has been wound onto the roll 4, and, that the supporting structure 5 has been moved to the full line position of Figure 1, the operator then manipulates the control to move the completed roll 4 onto the structure 5. The operator then admits pressure into the cylinder 7 so as to move the piston head downwardly whereupon the structure is swung in a downward direction about the pivot to the shaft 12 until the structure 5 reaches the floor level, or,

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the position denoted by the dotted lines in Figure 1. More specifically, there is provided a double acting piston and cylinder into which during lowering movement, the pressure medium is introduced from above the piston and from which the medium is discharged below the piston whereas during the raising movement, a reverse cycle is effected. The wound roll can be then be moved from the winding machine to the desired location. If the structure 5 is not to be used again, the operator then moves the front portion or section 6 in an upward direction about the bolt 14 to the dot-dash position of Figure 1, whereupon a locking unit 17 pivoted to the frame 11 is moved to drop around a pin 17A in the front portion or section 6 to thereby lock the sections 5A and 6 in the relationship indicated in Figure 1. This means that when the structure 5 is in the inoperative position, the front section 6 cannot be accidentally swung about its pivot 14 into the operative position.

When the structure 5 is not in use, it consumes but relatively small area, and, it does not interfere with the operators in their work upon the machine. It is a simple procedure on the part of the operator to either position the structure 5 in the operative or the inoperative environments. The lifting mechanism is quite cheap to manufacture by virtue of its simplicity structurally and it presents no problems from the maintenance view point.

Obviously, the structure 5 in form of a cradle extends across the full width of the machine and a piston and cylinder is associated with the lowering assembly. Also, in lieu of the pivoted front section, the assembly may be made of telescopic sections since the essence of the lowering assembly is that the length thereof may be decreased when the assembly is not in use or in the inoperative position.

It will be appreciated from the foregoing description that the lowering assembly consists of but few cardinal working parts, with such assembly so constructed that in the operating position, the wound roll is supported thereon in a stable fashion for movement to the floor, yet when the assembly is not in use, the assembly can assume a compact form within the frame thereby consuming a small area of the frame and not hindering the movements of the operators. The assembly is locked in such compact form, and, when to be used, the operator merely extends the assembly to its operating position and the manipulation of the cylinder controls automatically moves the assembly to its upper location to receive the wound roll.

The invention is not to be confined to any strict conformity with the showing in the drawings, but, may be changed or modified so long as such changes or modi-

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fications mark no material departure from the salient features of the invention as expressed in the appended claims.

I claim:

1. In a winding machine of the type having a frame, a pair of horizontally disposed rollers journaled in the frame for supporting the roll upon which the paper is wound, and further means on the frame to which the wound roll is transferred to lower the wound roll to a lower plane, such further means including a stationary section connected to the forward horizontally disposed roller and a movable section pivoted to the stationary section for folding movement in the direction of the wound roll, so that when the movable section is moved in a direction away from the wound roll, the respective sections can support the wound roll yet when the movable sections is moved toward the stationary section, the sections can be folded together beneath the rollers, and power means connected to the stationary section and to the frame to move the further means about its pivot to said forward horizontally disposed roller.

2. The machine as defined in claim 1 further characterized in that complementary means are provided on the said movable and stationary sections to prevent downward movement of the movable section about its pivot to the stationary section when the movable section has been moved in a direction away from the said stationary section.

3. The machine as defined in claim 2 further characterized in that locking means on the frame is engageable with the movable section when such section is moved toward the stationary section and such sections have been lowered into the frame by said power means to lock the sections together.

4. The machine as defined in claim 1 further characterized in that the wound roll supporting face of the further means is provided with a radius conforming to that of the wound roll to prevent displacement of the roll from such further means during lowering movement.

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